MAY 26 1905

SMALL PARKS IN CHICAGO

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Architects

Olmsted Bros.,
Landscape Architects

IRVING K. POND, DES. LORADO TAFT, SCULPT.

MAY 1905

THE INLAND ARCHITECT AND NEWS RECORD

Entered at the Postoffice at Chicago as second-class matter.

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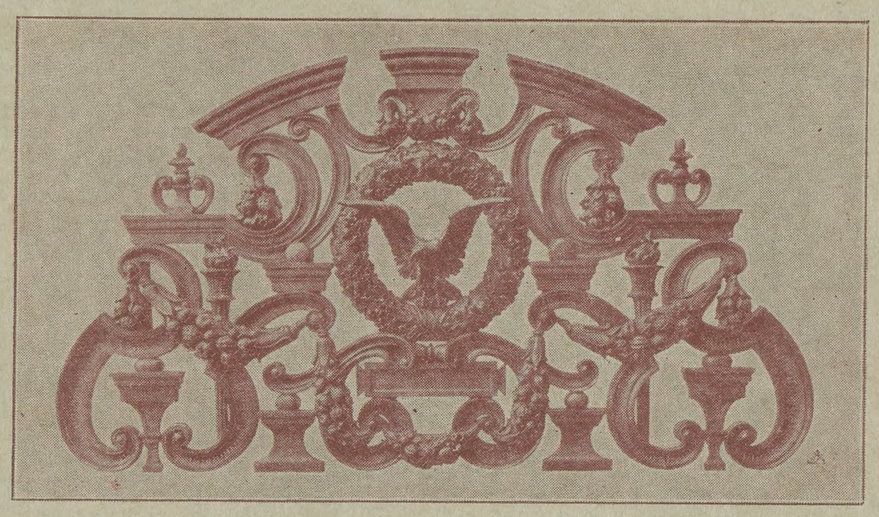

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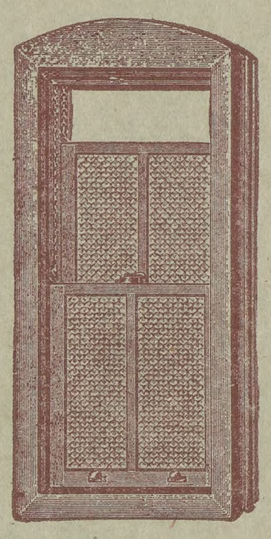

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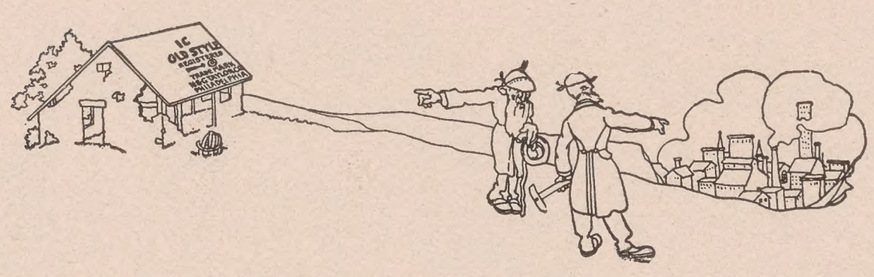

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MANUFACTURED GAS FOR LIGHT.

The following tables show the proportionate size and length of tubing allowed:

Size of Tubing	Greatest Length Allowed	Greatest Number of 3/8" Openings Allowed
3/8 inch	20 feet	2 openings
1/2 inch	30 feet	3 openings
3/4 inch	60 feet	10 openings
1 inch	70 feet	15 openings
1 1/4 inch	100 feet	30 openings
1 1/2 inch	150 feet	60 openings
2 inch	200 feet	100 openings
2 1/2 inch	200 feet	200 openings
3 inch	300 feet	300 openings

Drops in double parlors, large rooms and halls of office buildings must not be less than 1/2 inch.

STORES, HOSPITALS, SCHOOLS, FACTORIES, ETC.

MANUFACTURED GAS FOR LIGHT.

Size of Tubing	Greatest Length Allowed	Greatest Number of 1/2" Openings Allowed
1/2 inch	20 feet	1 opening
3/4 inch	60 feet	8 openings
1 inch	70 feet	12 openings
1 1/4 inch	100 feet	20 openings
1 1/2 inch	150 feet	35 openings
2 inch	200 feet	50 openings

For stores the running line to be full size to end of last opening.

All drops to be 1/2 inch with set not less than 4 inches.

Twenty feet of 3/8-inch pipe allowed only for bracket lights.

BUILDING SERVICES.

In running service pipe from front wall to meters the following rules will apply:

Size of Opening	Greatest Length Allowed	Greatest Number of 3/4" Openings Allowed
1 inch	70 feet	1 opening
1 1/4 inch	100 feet	3 openings
1 1/2 inch	150 feet	5 openings
2 inch	200 feet	8 openings

All openings in service must be equal to the size of riser, which in no case must be less than 3/4 inch.

MANUFACTURED GAS FOR FUEL.

Size of Tubing	Greatest Length Allowed	Greatest Number of 3/4" Openings Allowed
3/4 inch	50 feet	1 3/4-in. or 2 1/2- in.
1 inch	70 feet	2 or 1 3/4-in. and 2 1/2-in.
1 1/4 inch	100 feet	4 or 2 3/4-in. and 4 1/2-in.
1 1/2 inch	150 feet	7 or 4 3/4-in. and 6 1/2-in.
2 inch	200 feet	15 or 8 3/4-in. and 14 1/2-in.

For mantels, grates and small heating appliances, for heating space not to exceed 1,728 cubic feet, thirty feet of 1/2-inch pipe is allowed for one opening only, and two such openings are considered as one 3/4-inch opening.

FOR GAS ENGINES.

Size of Engine	Size of Opening	Greatest Length Allowed
1 H. P.	1 inch	60 feet
2 H. P.	1 1/4 inch	70 feet
5 H. P.	1 1/2 inch	100 feet
7 H. P.	1 1/2 inch	100 feet
12 H. P.	2 inch	140 feet

Supply for gas engines must be separate, and an independent service will be required.

For special purposes not provided for above, apply to the company's inspector for information.

SUMMARY

1. All branches or cross lines of pipe from the main line must have a set not less than 4 inches dropped square, and must be well secured to joist by gas hooks or straps.

2. All openings must be closed with iron caps, no split pipe or broken fittings repaired with cement or lead will be allowed.

3. All drops on branch lines and openings for side brackets must be square bends; no nipples allowed.

4. The risers in all buildings must be carried up an inside partition out of reach of frost and must be placed where the meter and stop cock can be readily got at. Vestibules not to be considered as inside partitions.

5. To avoid trapping, gasfitters must grade all pipes to riser or drops.

6. In no case will a meter be set where it is not easily accessible, or where it is exposed to frost or dampness, or liable to injury from any cause.

7. All pipe for fuel must be run independent, and connected to light riser at meter end, with right and left, union or running thread.

8. Supply for gas engines must be separate, and an independent service will be required.

9. Drops in churches, schools, public halls, stores, double parlors, large rooms, etc., must not be less than 1/2 inch.

10. No riser in any building must be less than 3/4-inch and in stores must not be under deck of show windows, as meter will not be set there.

11. The riser in any building must not be less than 20 inches from the floor for two to ten openings;

2 feet 6 inches for ten to thirty openings;
4 feet for thirty to sixty openings;
5 feet for sixty to one hundred openings;
6 feet for over one hundred openings.

Where meters are to be set on wall, no riser must be higher than 9 feet from floor.

12. In all cases where extensions are made care must be taken to break pipe where the rule for size can be maintained, and in no case shall extension be made from small pipes.

13. In flat buildings meters should be set in basement or in room provided for meters; otherwise in premises where gas is consumed.

14. All risers and building services must be brought to front of building and within 18 inches of wall or partition, and must not be less than 15 inches apart where risers are grouped.

In all cases where building service is used, provide header with an opening for each riser; where risers are in groups, openings must not be less than 15 inches apart.

16. Underground work by gasfitters between main and meter will not be allowed or accepted.

17. To avoid complications, gasfitters should consult this company before locating risers in corner buildings.

18. In flat buildings where appliances are installed for the joint use of tenants, such as laundry stoves, driers, etc., run pipe from each meter to laundry and provide a header with a lock cock for each tenant. Fasten securely to each cock a metal tag with the flat number plainly marked thereon.

19. All work must be proved with mercury gauge, not less than a 6-inch column of mercury being allowed.

20. All pipe must be examined by the inspector of this company before being concealed, and twenty-four hours' notice must be given by gasfitters when any pipe is ready for inspection.

21. If the rules concerning the size of pipes are not clearly understood in each case, or if unusual conditions are met with, which the rules do not cover, communicate with the company's inspector.

22. It is the purpose of the company to strictly enforce the above rules, and no certificate of inspection will be given when they are not complied with.

23. Architects, builders and owners of buildings are requested not to allow a bill for gasfitting unless accompanied by a certificate of inspection.

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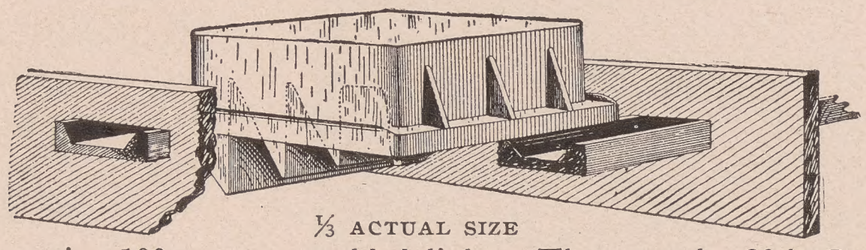

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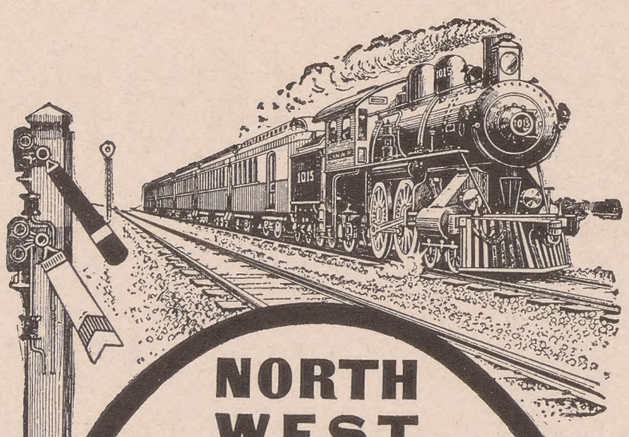

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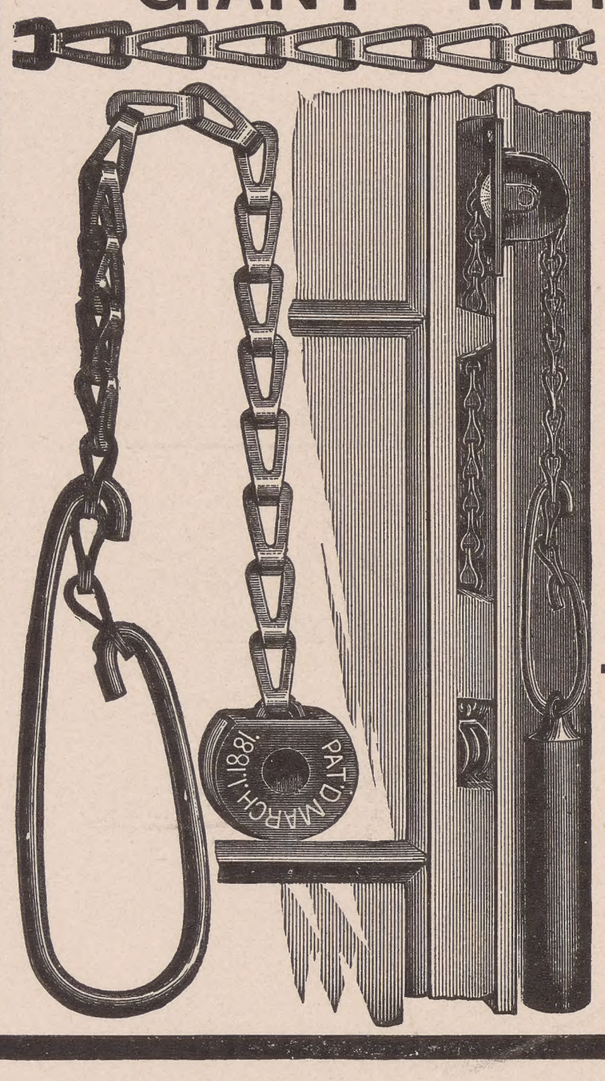

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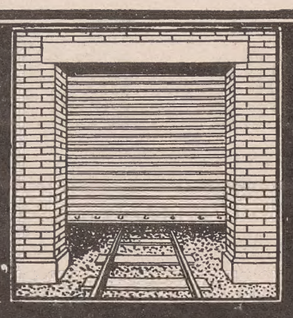

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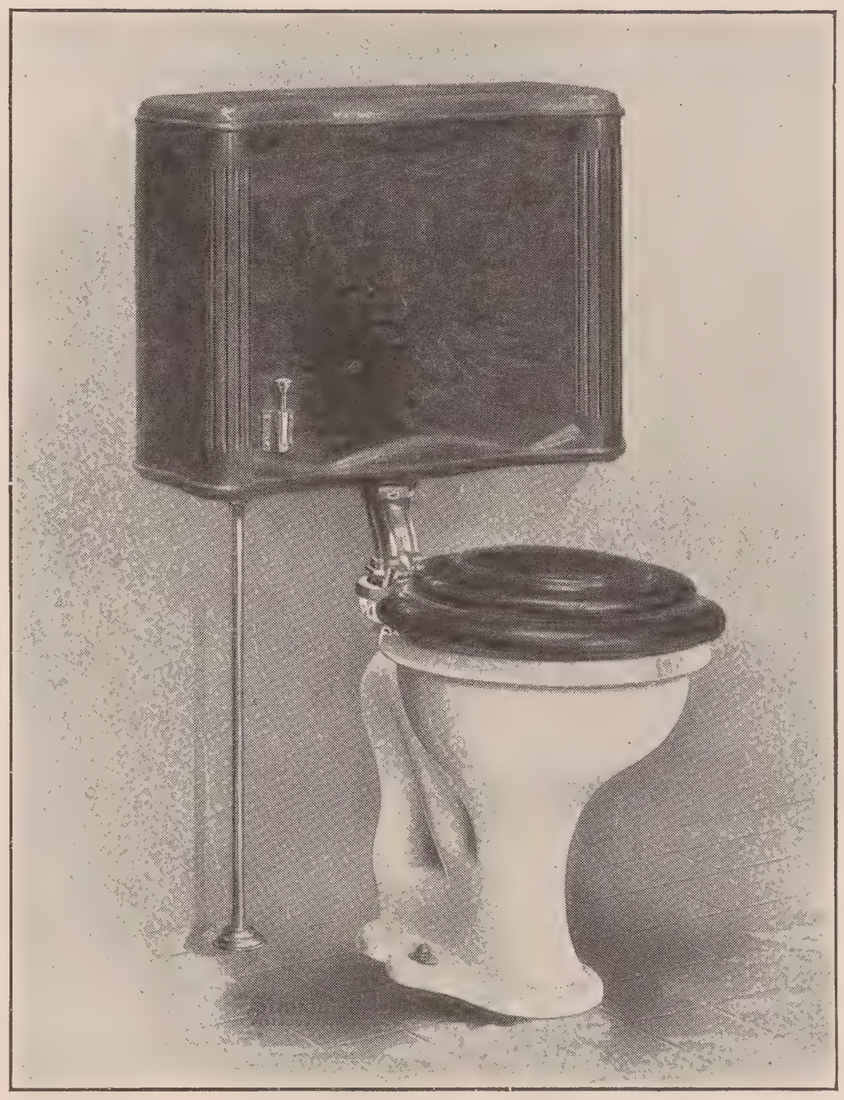

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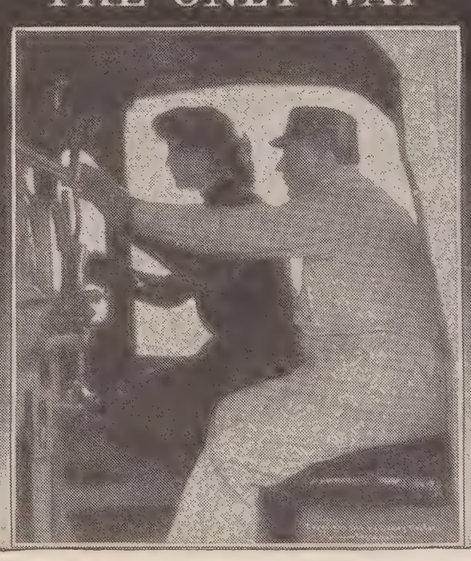

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VOL. XLV. MAY, 1905 No. 4

A Monthly Journal Devoted to

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ISSUED ON THE 15th OF EACH MONTH

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NEXT CONVENTION AT NEW YORK, N. Y., 1906.

Why not Frank Millet to head School at Rome

In the organization of the Academy of Fine Arts in Rome, in which Mr. McKim and the board of managers have been so successful both in the selection of the Villa Mirafoire and the securing of a million of dollars for its maintenance, we wonder if it has ever occurred to these gentlemen that there is one who, if he could be induced to occupy the position, would make an ideal head for its direction. If Mr. McKim could induce Frank Millet to undertake this work, his service to the artist world would be greater than the gathering of many millions, and equal the conception and establishment of the school itself.

Architectural Measures Adopted at Washington

We are not in the habit of talking about what the INLAND ARCHITECT has accomplished or the course of action it has influenced in the architectural field in the twenty odd years of its endeavor to fitly represent the profession, but the work which it has done in this direction has been so signal in the case of the proper grouping of buildings and the attendant general plan for beautifying Washington that it might be mentioned with some propriety at this time. As early as 1900, action in this direction was called for and our Washington correspondent, Mr. F. W. Fitzpatrick, outlined a plan for a states building exactly in the form which is now taking shape in the buildings lately ordered by Congress to be used as office buildings for senators and congressmen, the adoption of a plan which then seemed visionary. And it was undoubtedly owing to the efforts of this journal that the architectural commission and its attendant work was first given serious consideration by the American Institute of Architects and later by Congress. It is only by such agitation that the work of architectural advancement can progress, and this journal has ever since it outlined the provisions of the Stockslager Bill (of which the Tarnsey Act was the descendant), months before it was submitted to Congress, down to the present, kept in touch with these great public improvements, and for years has kept a correspondent of the highest order of architectural ability at Washington for this purpose. There is no special credit in this. The measures of elevation, for such they are, that we have advocated, were and are necessary to the future convenience and beauty of our capitol city. Congress cannot ignore the necessity nor escape the duty of lending every aid to the plans placed before it by the commission, nor can it afford to let private interests at Washington or elsewhere direct the erection of structures for government use in unsuitable places upon inartistic plans. That the President, Congress and the people have come to recognize this, is a matter for congratulation, and the immediate establishment of the commission in permanent control at Washington in support of the late order of the President is now a plain duty incumbent upon Congress and cannot be ignored nor evaded.

Competition for new Courthouse at Chicago

It is encouraging to note the fact that the Cook County (Illinois) board, in considering the rebuilding of the county building in Chicago, has gone into the matter of obtaining the design in a manner that will meet with the approval of architects generally. Of course it will be a competition, but it will be adjudicated by experts and the designers will be unknown until the award is made. While the competition is open to the profession generally, the commissioners have invited designs, which will be paid for, from Carrere & Hastings and Geo. B. Post & Son of New York, Shepley Rutan & Coolidge of Boston, and Heuhl & Schmidt, Holabird & Roche, D. H. Burnham & Co., and Frost & Granger of Chicago. To those who are conversant with the competition of twenty-five years ago, which resulted in the present building, the equitable lines upon which this competition is drawn will show that the growth of the public's understanding of architectural practice is perhaps as great as in any other direction. Chicago and the county of Cook are to be congratulated, for this action of the commissioners ensures a practical building that will be an ornament to the city as well. It is unfortunate that so early in the history of the proposed competition two and perhaps three of the seven firms invited to compete have declined, and occasioned the issuing of the following letter by one of the firms invited:

May 9, 1905.

Editor INLAND ARCHITECT:

The programme for a competition for the proposed court house for Cook County, Illinois, has been issued by the Board of Commissioners of Cook County, in which the names of several architects or architectural firms are given as having been invited to compete and having accepted this invitation, our name appearing among others.

We were not aware that this competition was to take place. We had never been asked to compete, nor had we signified our willingness to do so. The first knowledge we had of the matter was obtained upon the receipt of the programme with a letter inviting us to compete. We could not approve of the terms of the competition and have therefore declined the invitation.

You will oblige us by publishing this letter in the next issue of your paper.

Yours very truly,
CARRÈRE & HASTINGS.

As the time limit set for the acceptance of the competition is past we will not go into the details of the programme, but a full investigation makes it apparent that while the above firm refuses upon professional and also business grounds, the main objection of the second firm, that of D. H. Burnham & Co., is stated to be because they deem the compensation inadequate. The clause referring to the competition states that five per cent. shall be paid on the first million, four per cent. on the second million and three per cent. on the remainder of the cost of the building. This is, of course, not so attractive as a full five per cent. (as those who drew the programme urged) but its acceptance does not violate any professional rule, and the general terms of the competition are so commendable that this reduction might well be waived as an endorsement of the committee's efforts to establish a thoroughly equitable competition and one that would meet every requirement of professional ethics. While another clause apparently leaves the final selection of the architect open, it is the intention of the commissioners to award the design and the construction of the building to the author of the successful plan, though the fact that the board cannot delegate its authority, and the necessity of guarding against incompetent constructive ability in the successful designer made such provision in the programme necessary. We would like therefore to assure those who have signified their intention to compete, after a careful investigation in which the fullest liberty to examine documents was allowed, both by the president of the Board of Commissioners, and the Superintendent of Public Service in charge of the competition, that this programme has been compiled with the sole desire to obtain the best results possible and the avoidance of every chance for future misunderstanding and injustice in every form. We assure competitors that we believe that the best design will be accepted by the adjudicating committee and that the successful architect will remain the architect of the structure.

Live Interest in School Design and Construction

Like a large number of other cities in the United States, Portland, Oregon, is now giving special attention to school buildings, and strangely enough the agitation of Portland on the Pacific, and Baltimore on the Atlantic seems to be in regard to fireproofing such structures. At San Francisco and Oakland the dispute was largely in regard to the designing of buildings and was settled temporarily by a competition which divided eight buildings among five architects. At Portland this is also one phase of the dispute but the case is aggravated by the opposition of the board, which seems to be ruled by one man, to anything but frame structures. It is time that there should be no controversy upon either branches of school construction. Each design of a school building should be in itself educational, and represent our highest conception of architectural form, and should be procured from the best representatives of the profession either by appointment, as with private individuals, or by competition. But this is not so important as the other phase, that of making them as invulnerable to fire as modern fireproofing science will allow. There is no room for controversy in this, and each member of a school board which permits the erection of a combustible school building, whether on the plea of cost or any other, should be held criminally liable for any fire that occurs, even after he has ceased to be a member of the board. The best way to secure designs and properly constructed buildings is to employ an architect of the highest standing and follow his advice in the manner of construction. Both architect and steel and hollow tile construction will involve more money than the parsimony of the board or the incompetency that might develop in a competition would call for, but the risk to the pupils is too direct and vital to allow of any other course. Yet we find at Baltimore, even after the late practical test of fireproofing, a hesitation to expend an additional $50,000 to make the new high school building fireproof. This is a matter that should be governed by a city ordinance and thus placed beyond the whims or self interest of a school board.

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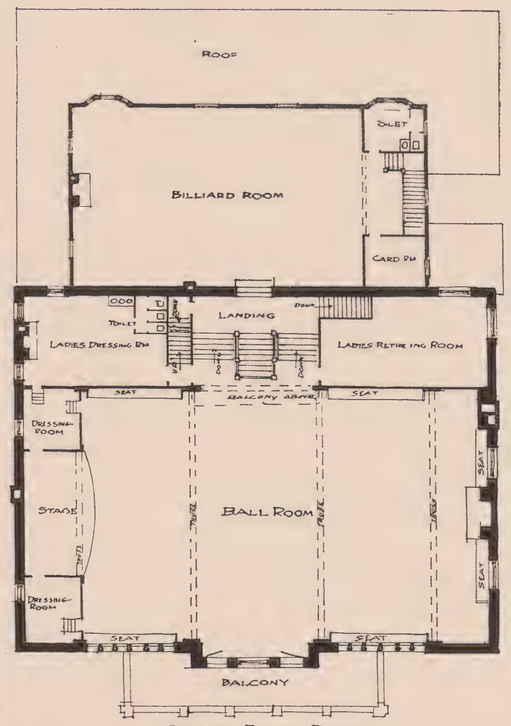

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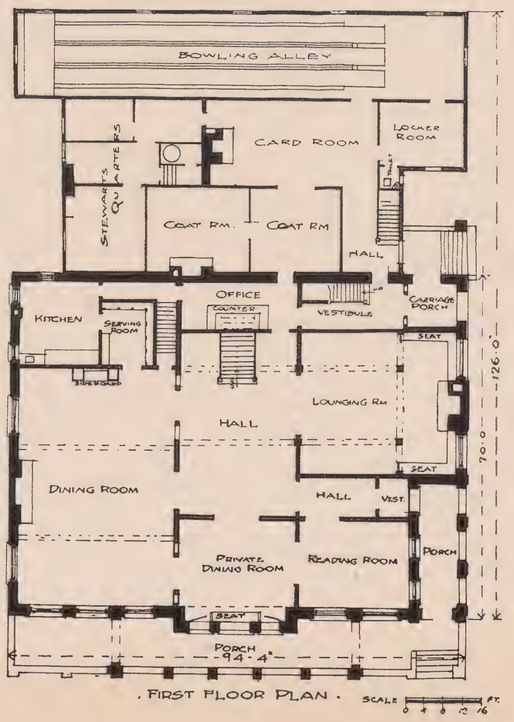

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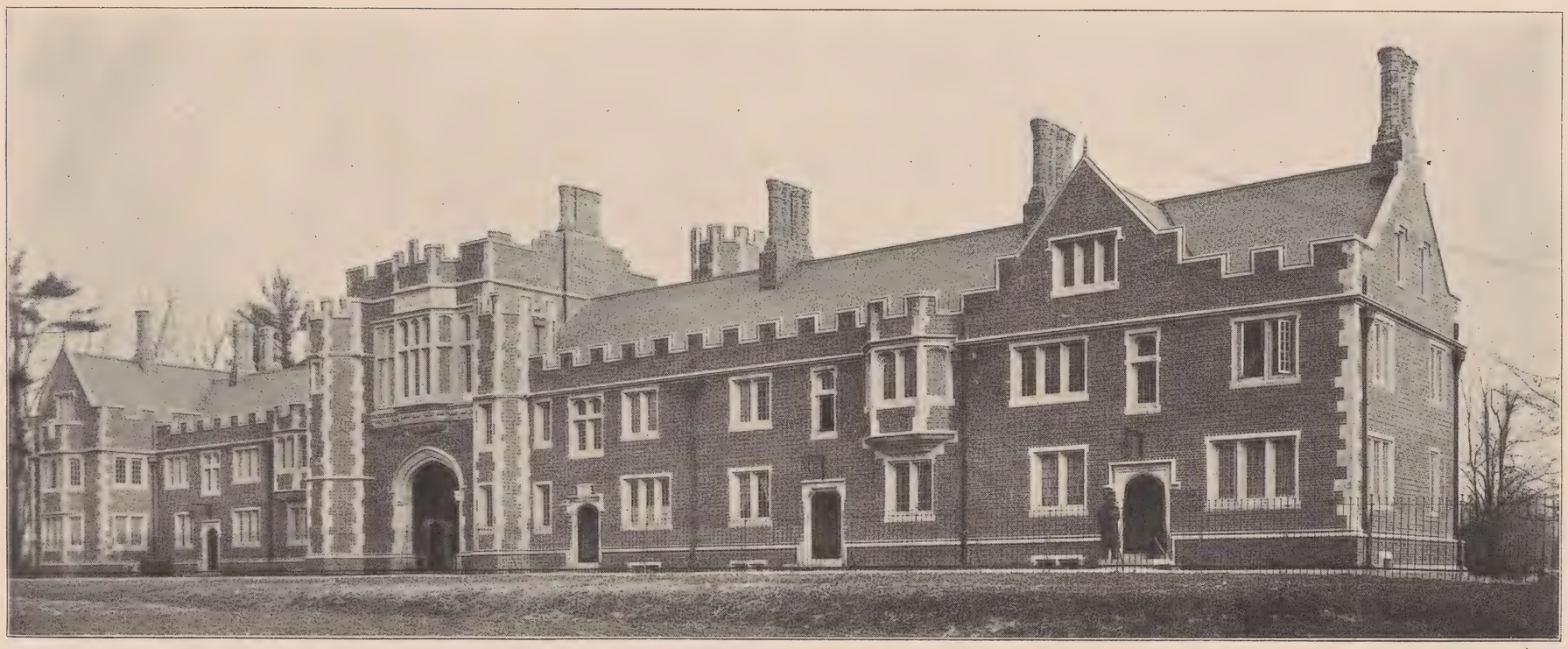

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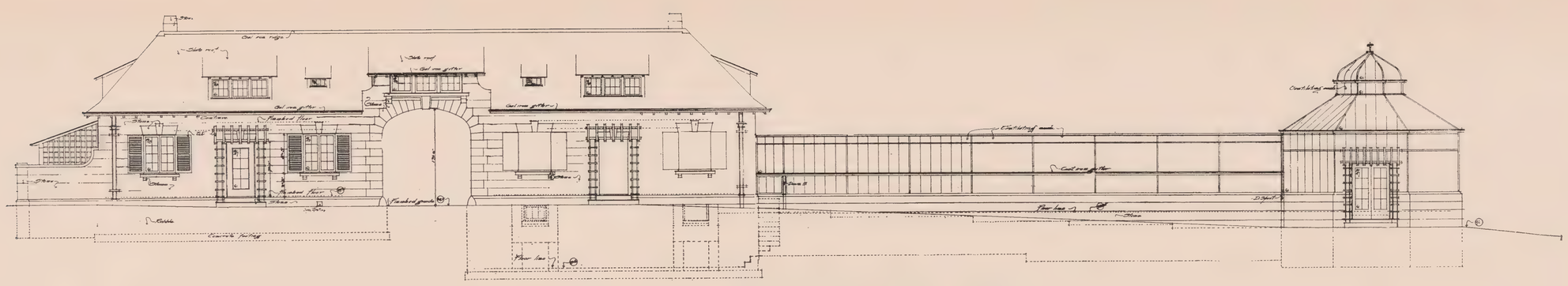

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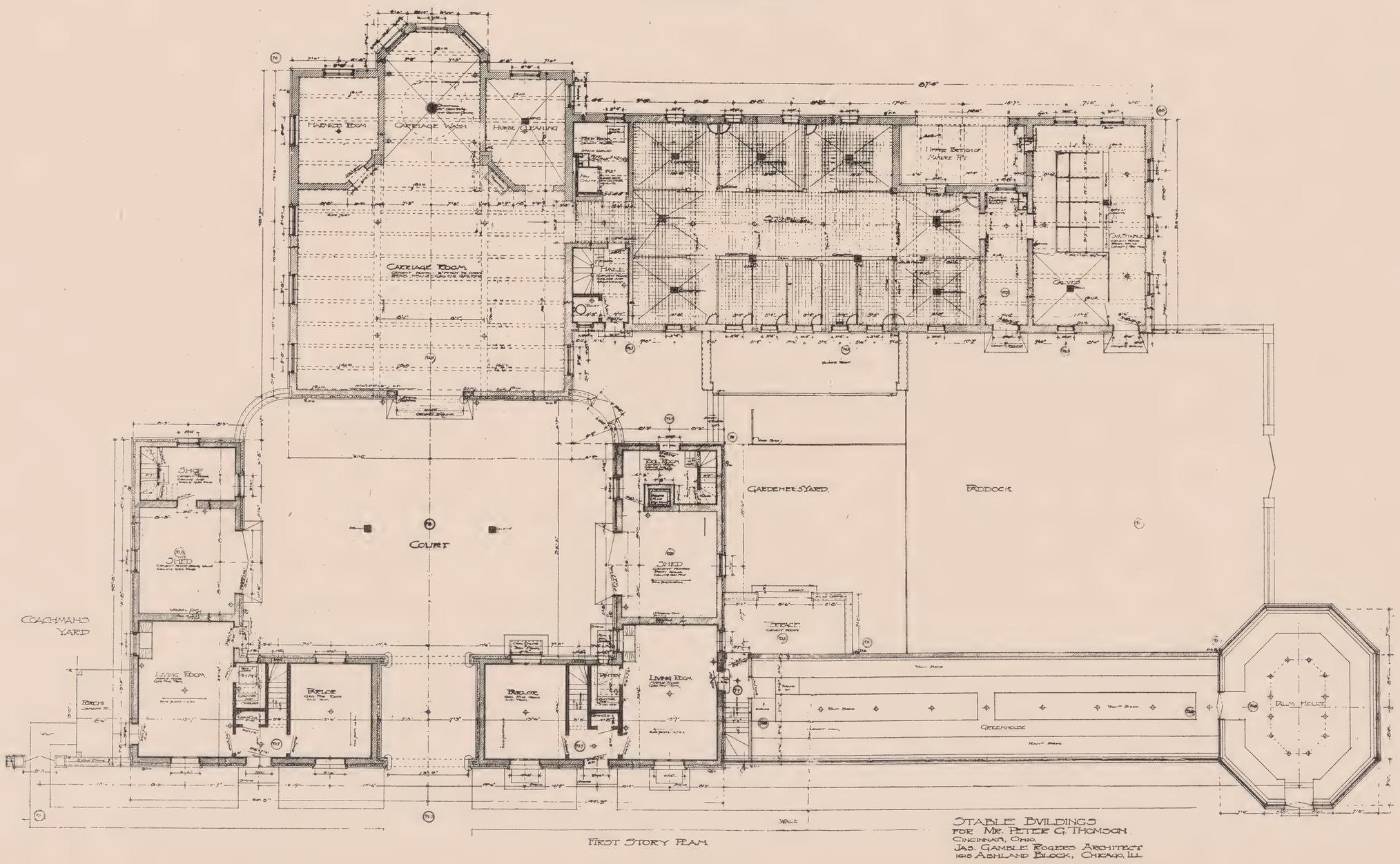

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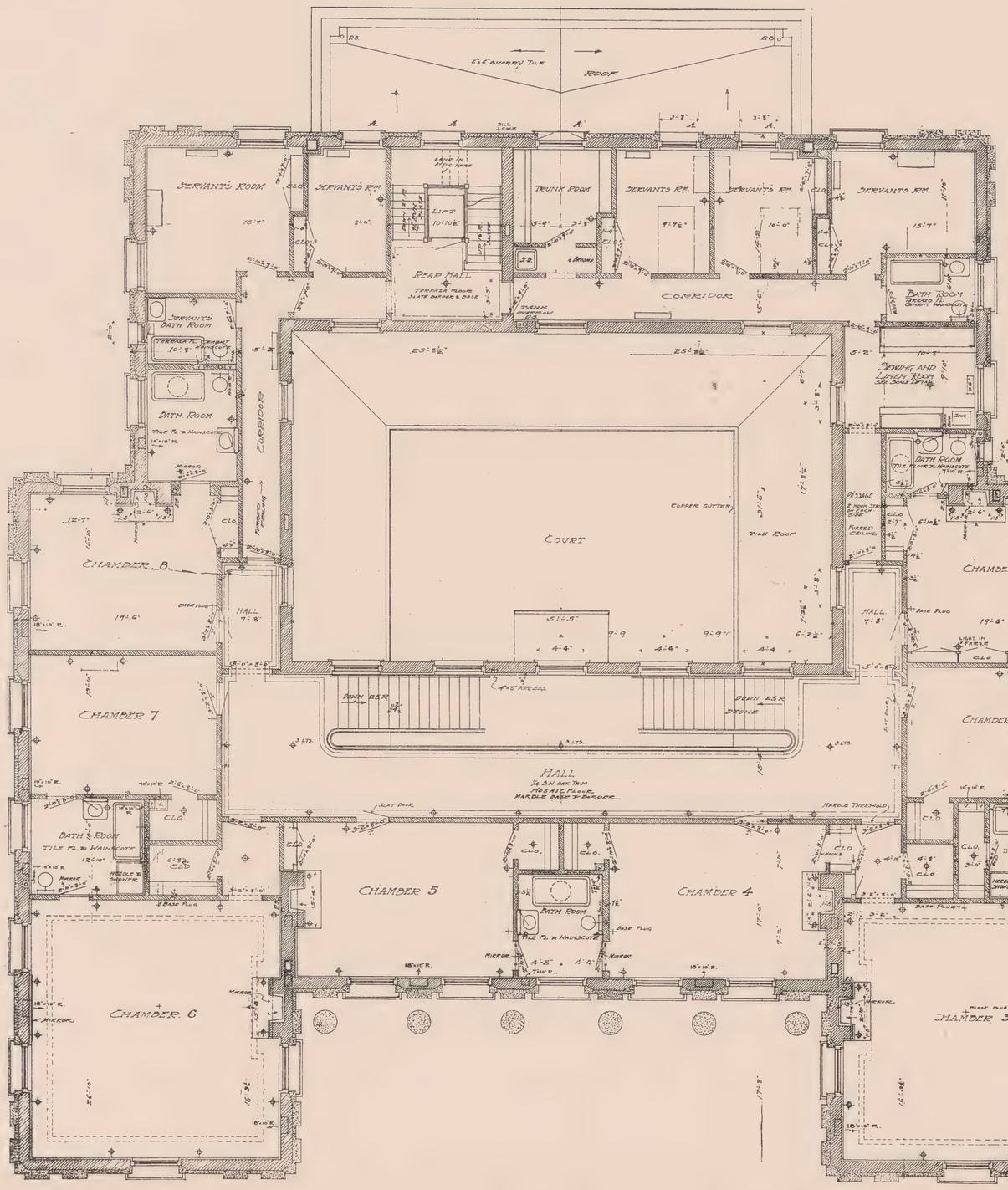

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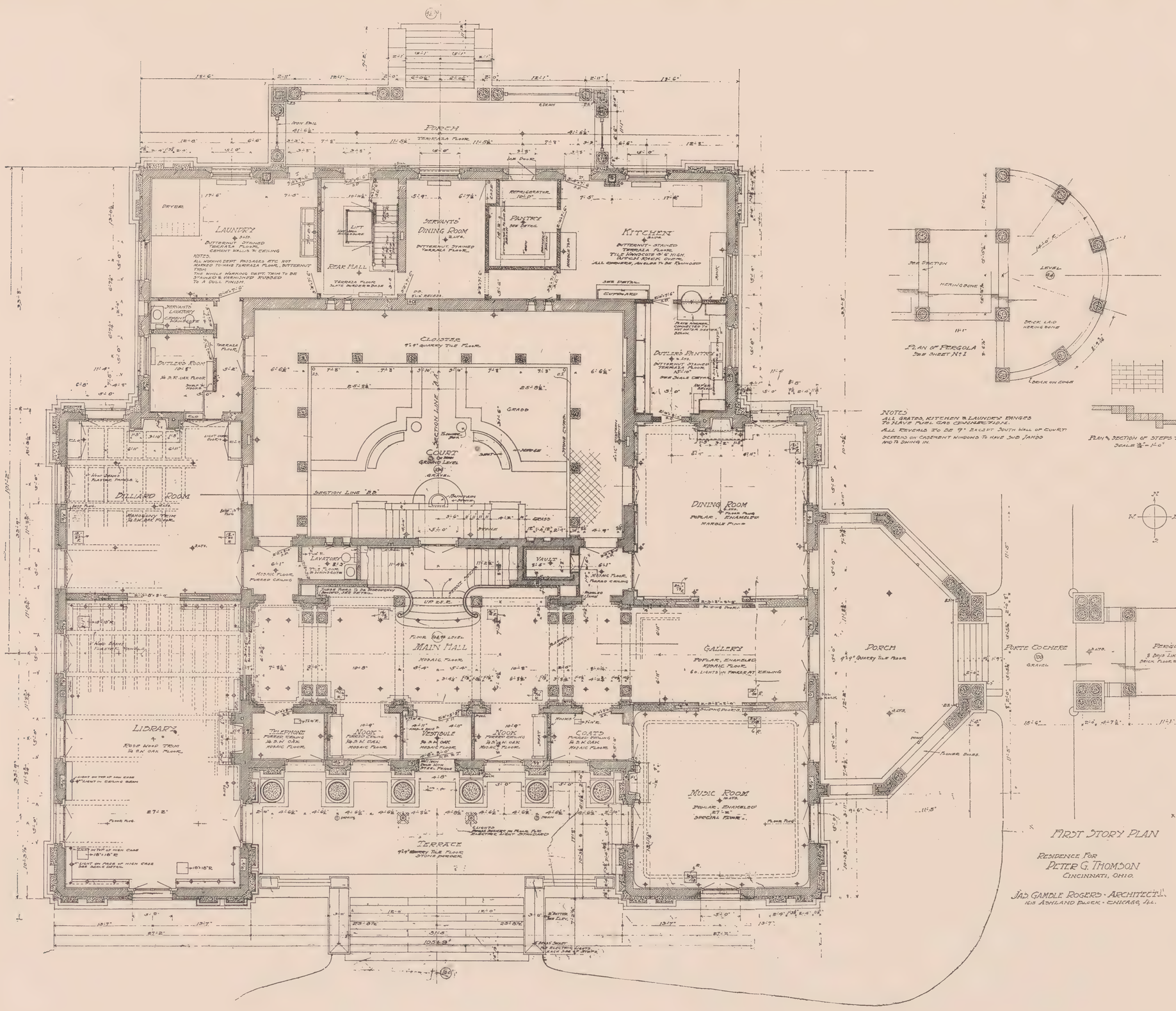

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JAS GAMBLE ROGERS - ARCHITECT
1615 ASHLAND BLOCK - CHICAGO, ILL.

CHARLOTTENBURG

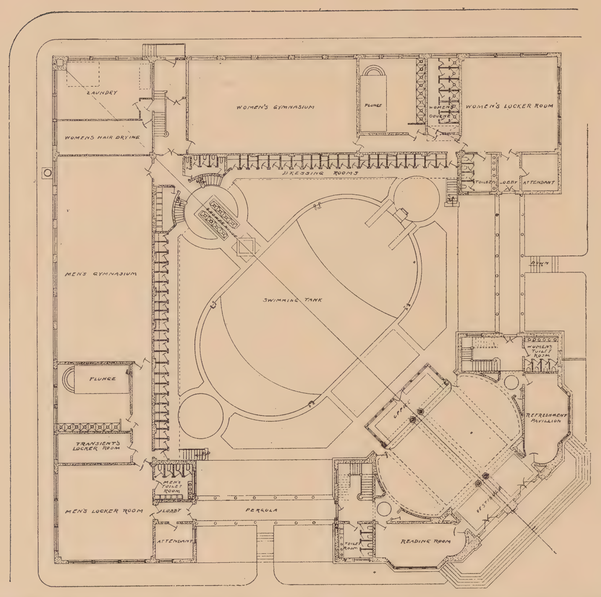
STUTTGART

DRESDEN

AIX LA CHAPELLE

BRUNSWICK

TECHNICAL HIGH SCHOOLS OF GERMANY



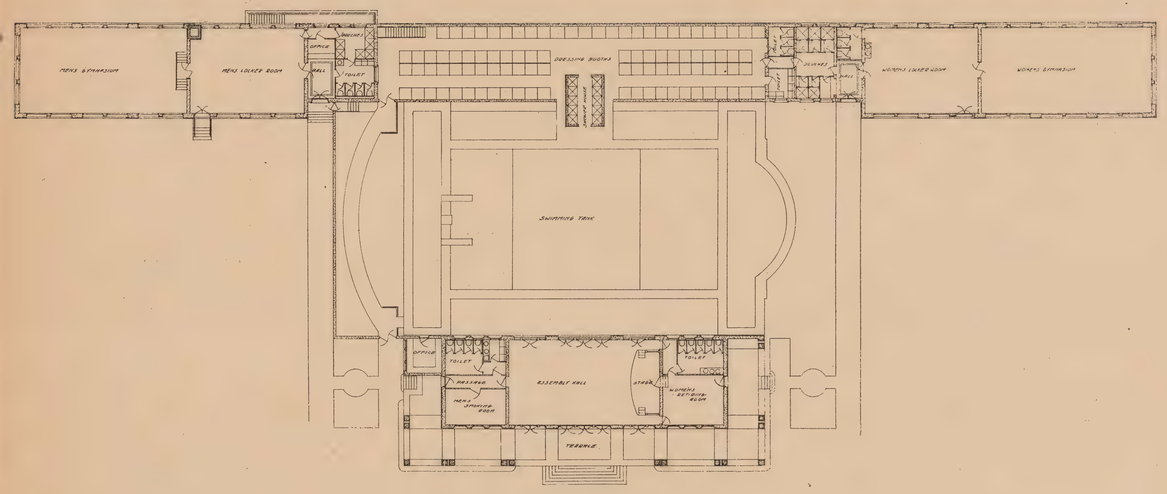
SOUTH PARK COMMISSIONERS
ARMOUR SQUARE
CHICAGO
1904
0 10 20 30 40 50 100 150 FT

OLMSTED BROS
LANDSCAPE ARCHITECTS

33RD ST

BUILDING
GYMNASIUM
SWIMMING POOL
FIELD HOUSE
WOMEN'S OPEN AIR GYMNASIUM
SHELTER
LITTLE CHILDREN'S PLAYGROUND
WADING POOL
SAND COURTS
SAND
SHIELDS AVE
MEN'S OPEN AIR GYMNASIUM
RUNNING TRACK
BALL FIELD
5TH AVE
34TH ST

WEW & F.A.R.



SOUTH PARK COMMISSIONERS
RUSSELL SQUARE
CHICAGO
1904
0 10 20 30 40 50 60 70 80 90 100 150 FT.

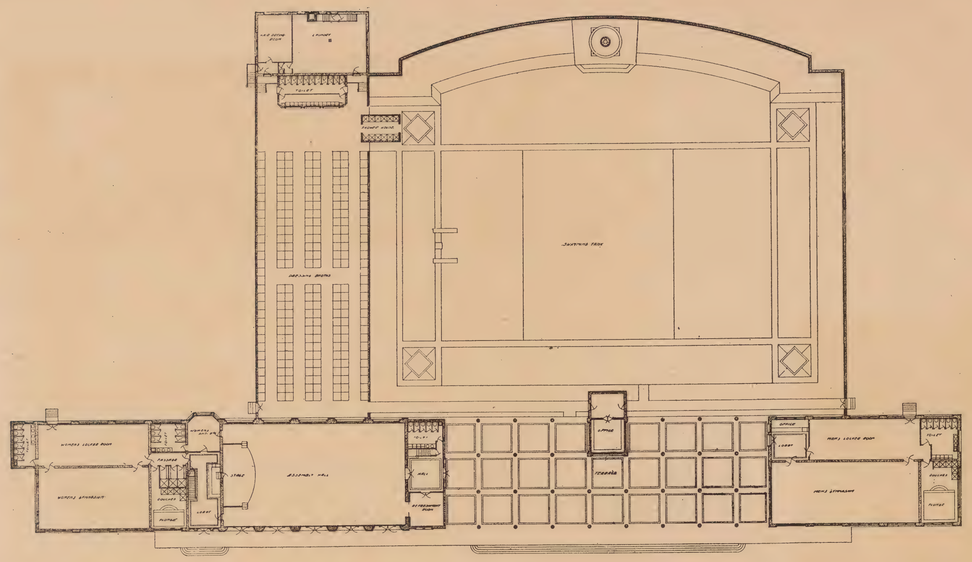
OLMSTED BROS.
LANDSCAPE ARCHITECTS

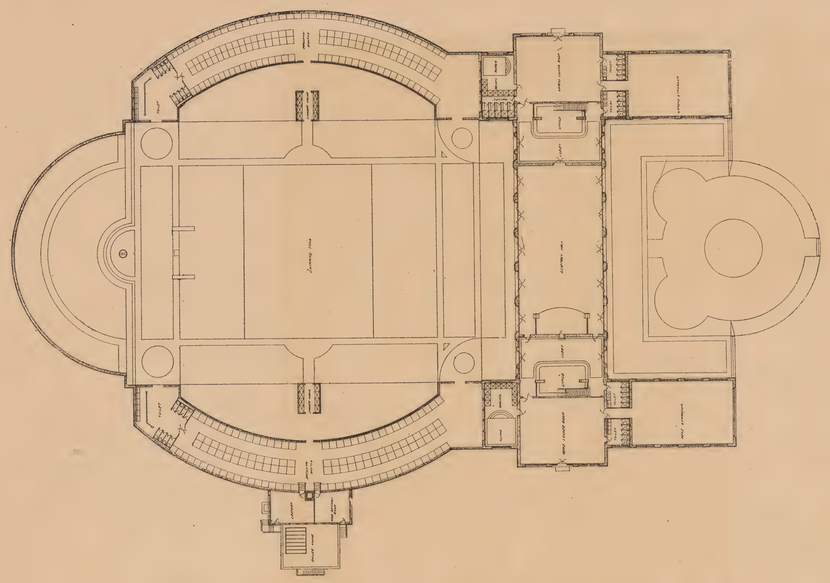
83RD ST.

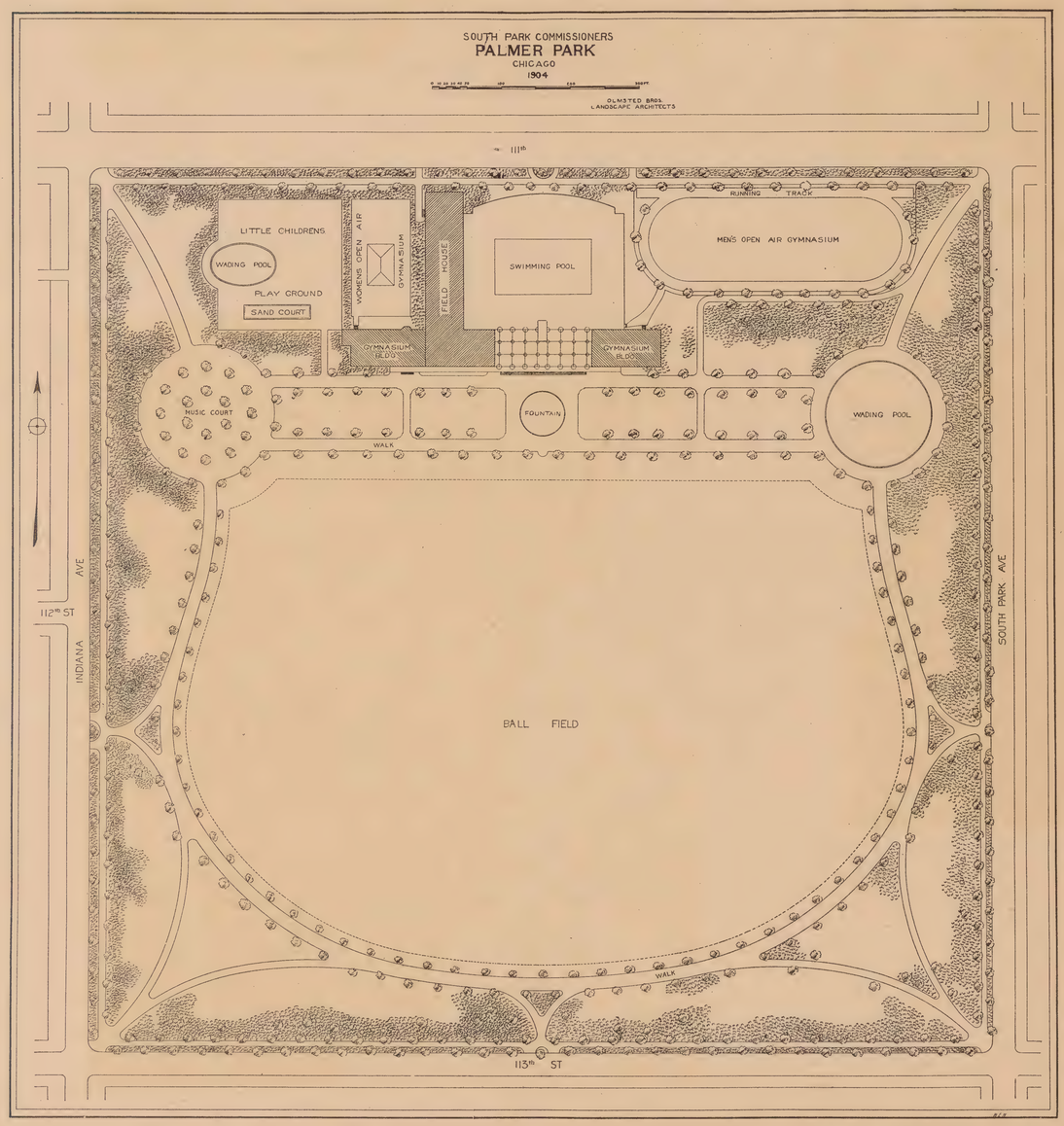
WOMEN'S OPEN AIR GYMNASIUM
LITTLE CHILDREN'S SAND COURT PLAYGROUND
GYMNASIUM BUILDING
SWIMMING POOL
FIELD HOUSE
BALL FIELD
HOUSTON AVE.
BOND AVE.
MEN'S OPEN AIR GYMNASIUM
WADING POOL
83RD PL.

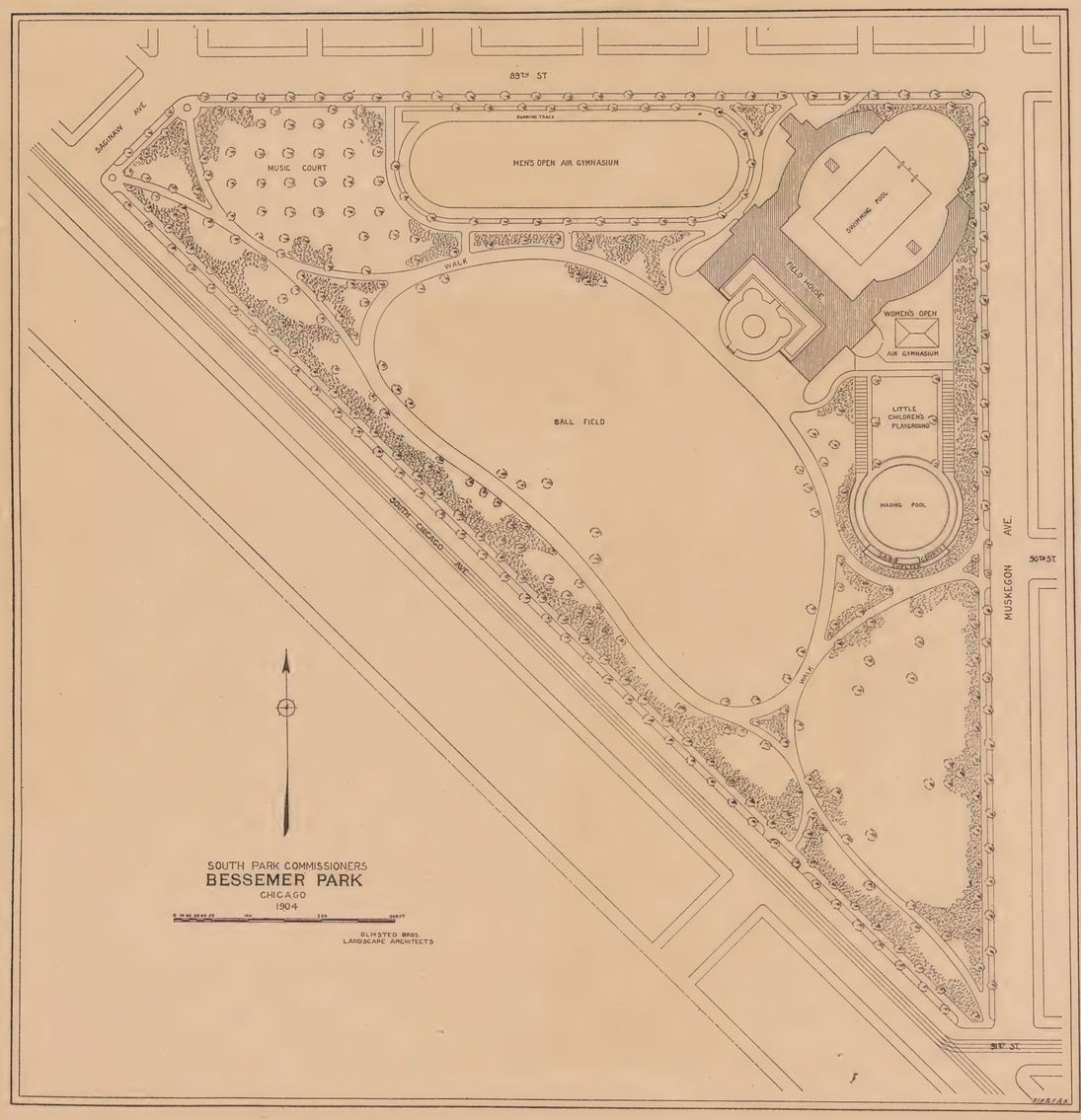
F.A.R.

ILLUSTRATING ARTICLE, "SMALL PARKS IN CHICAGO"
D. H. BURNHAM & CO., ARCHITECTS OLMSTED BROS., LANDSCAPE ARCHITECTS



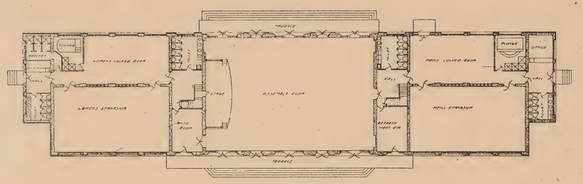






ILLUSTRATING ARTICLE, "SMALL PARKS IN CHICAGO"

D. H. BURNHAM & CO., ARCHITECTS OLMSTED BROS., LANDSCAPE ARCHITECTS

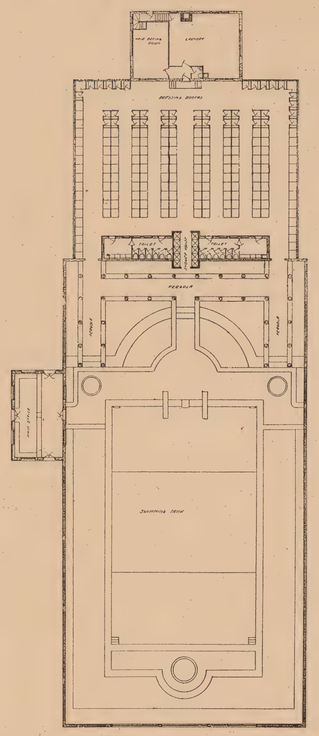


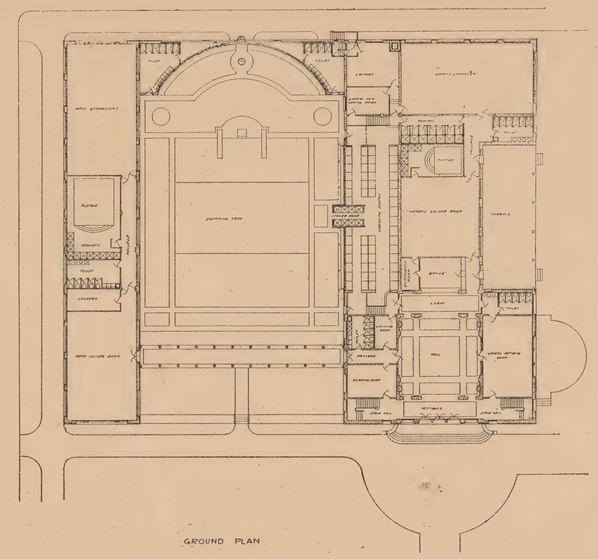
FIRST FLOOR PLAN

PARK Nº 2

CHICAGO.

SCALE: ⅛ IN. = 1 FT. D.H. BURNHAM & CO. ARCHTS.





GROUND PLAN

SOUTH PARK COMMISSIONERS

MARK WHITE SQUARE

CHICAGO

1904

0 10 20 30 40 50 60 80 100 FT.

OLMSTED BROS. LANDSCAPE ARCHITECTS

29TH ST

COURTS

SAND

LITTLE CHILDREN'S PLAYGROUND

SHELTER

WADING POOL

WOMEN'S OPEN AIR GYMNASIUM

BALL FIELD

FIELD HOUSE

RUNNING TRACK

MEN'S OPEN AIR GYMNASIUM

SWIMMING POOL

CABINS

BOILER HOUSE

POPLAR AVE.

HALSTED ST.

30TH ST.

F.A.K.

SOUTH PARK COMMISSIONERS

CORNELL SQUARE

CHICAGO

1904

0 10 20 30 40 50 100 150 FT.

OLMSTED BROS. LANDSCAPE ARCHITECTS

50TH ST.

RUNNING TRACK

MEN'S OPEN AIR GYMNASIUM

GYMNASIUM BUILDING

SWIMMING POOL

FIELD HOUSE

GYMNASIUM BUILDING

WOMEN'S OPEN AIR GYMNASIUM

SHELTER

LITTLE CHILDREN'S PLAYGROUND

SAND COURT

WADING POOL

BALL FIELD

MUSIC COURT

LINCOLN ST.

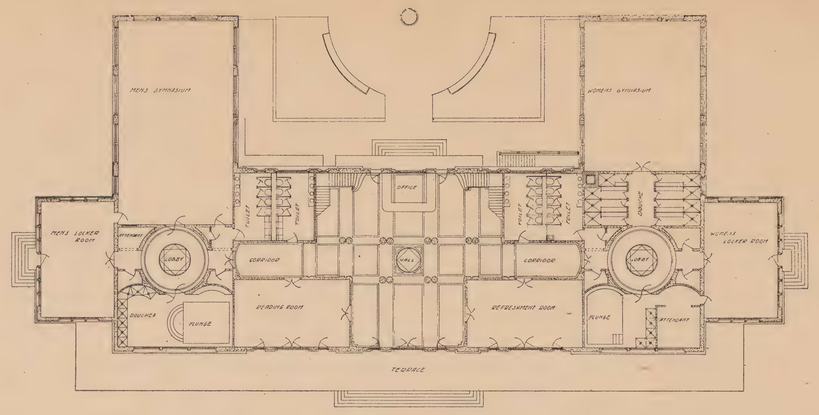
WOOD ST.

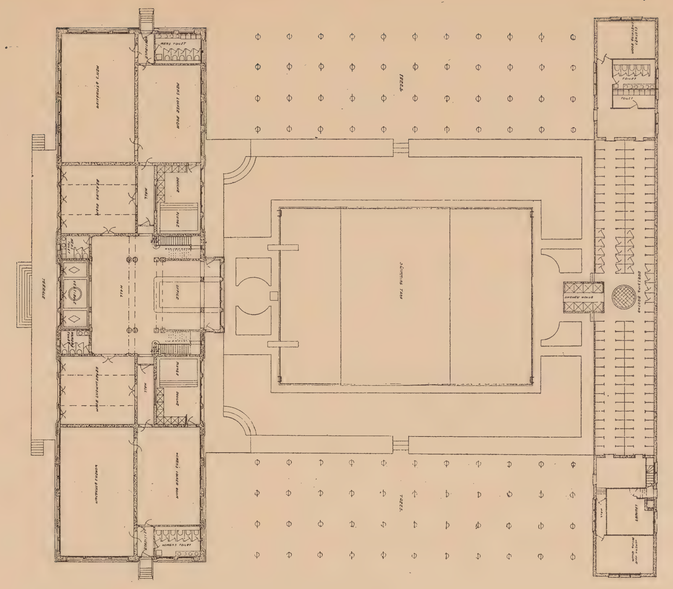
51ST ST.

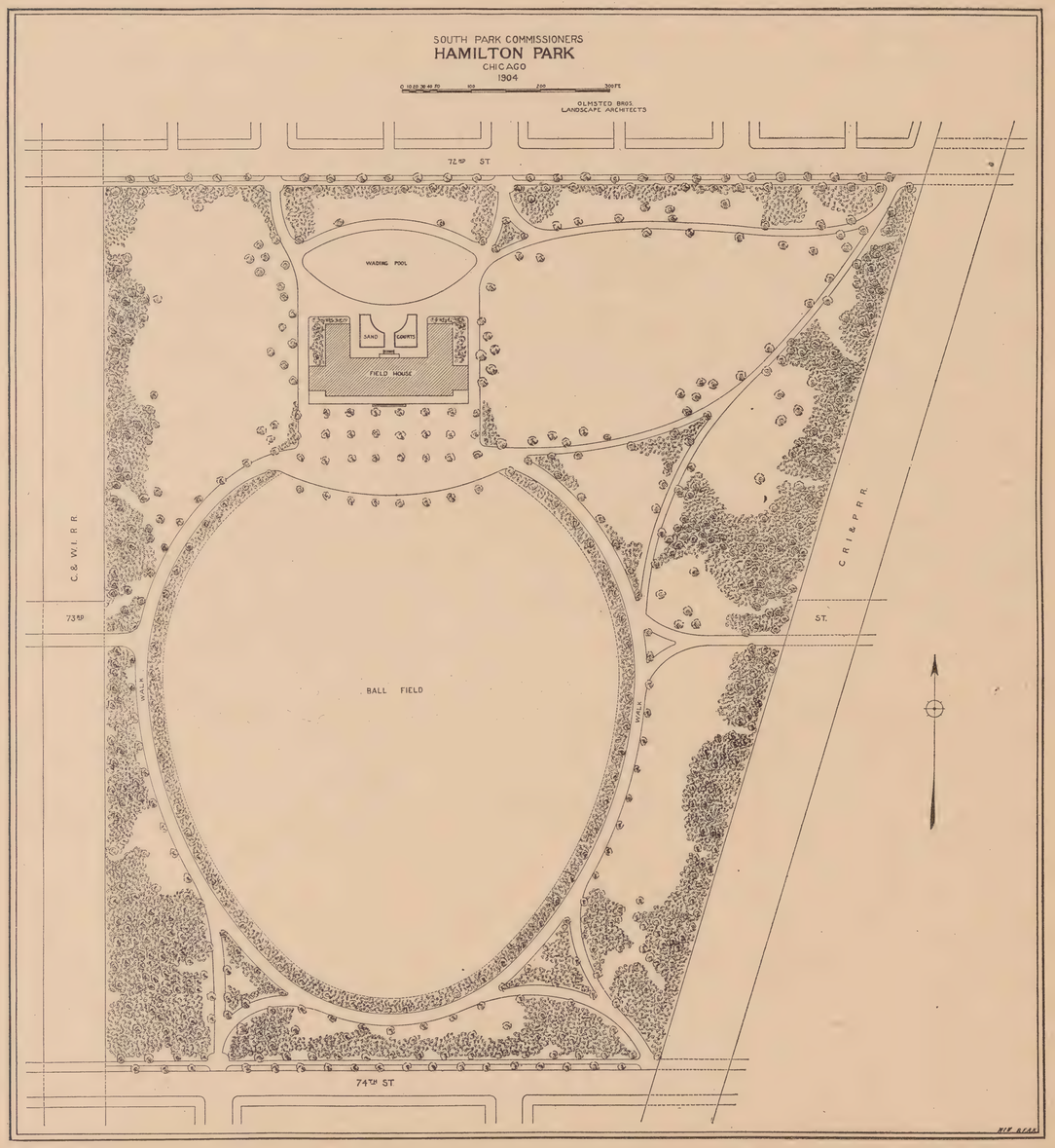
J.F.B. & F.A.K.

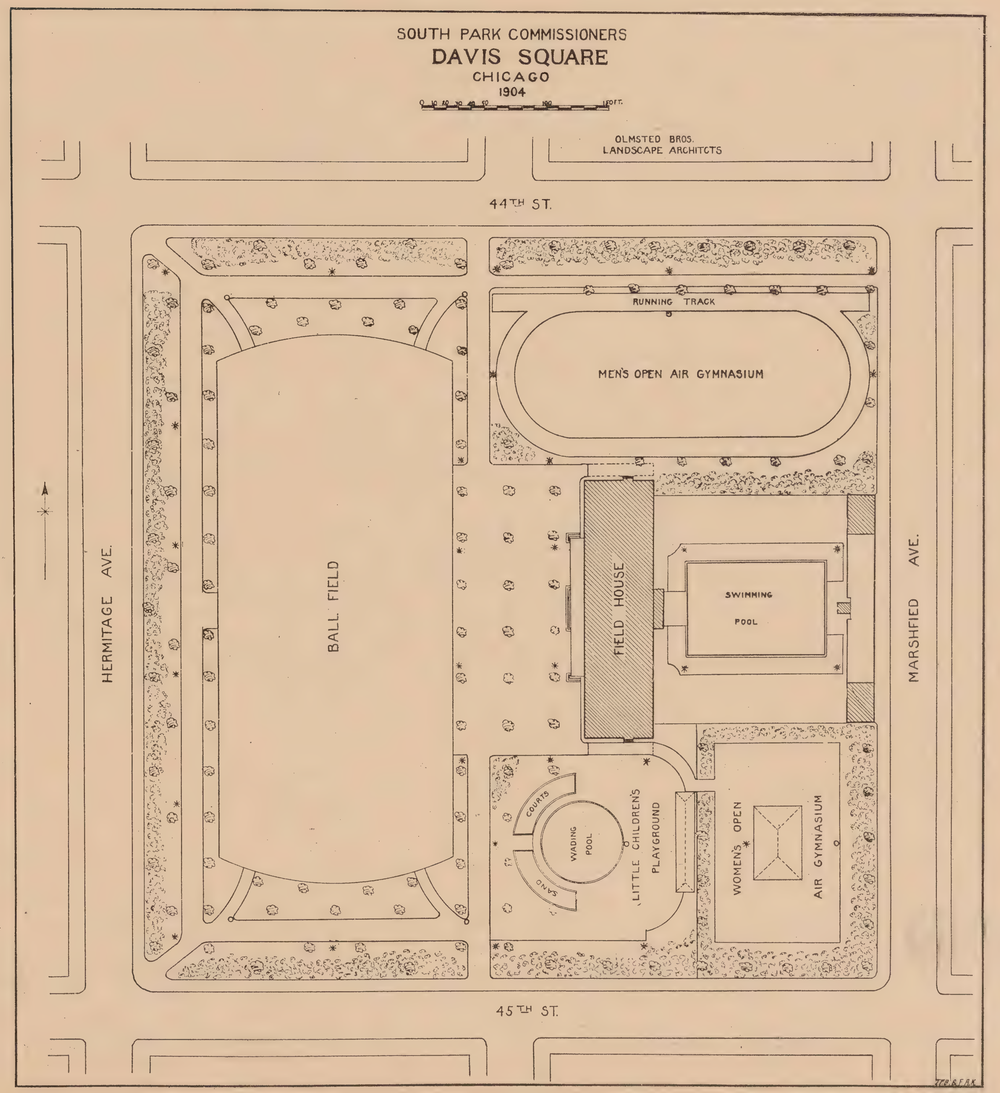
ILLUSTRATING ARTICLE, "SMALL PARKS IN CHICAGO"

D. H. BURNHAM & CO., ARCHITECTS OLMSTED BROS., LANDSCAPE ARCHITECTS



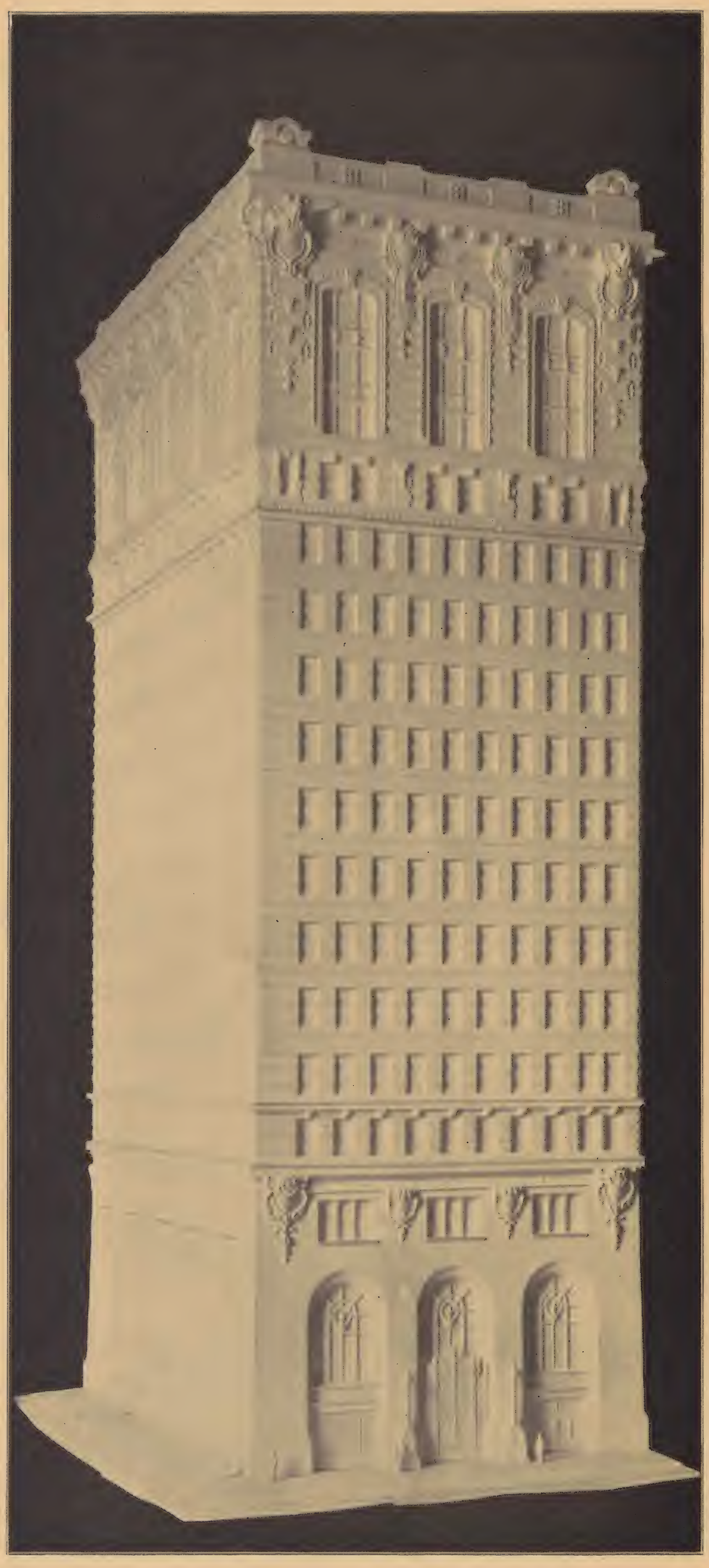






ILLUSTRATING ARTICLE, "SMALL PARKS IN CHICAGO"

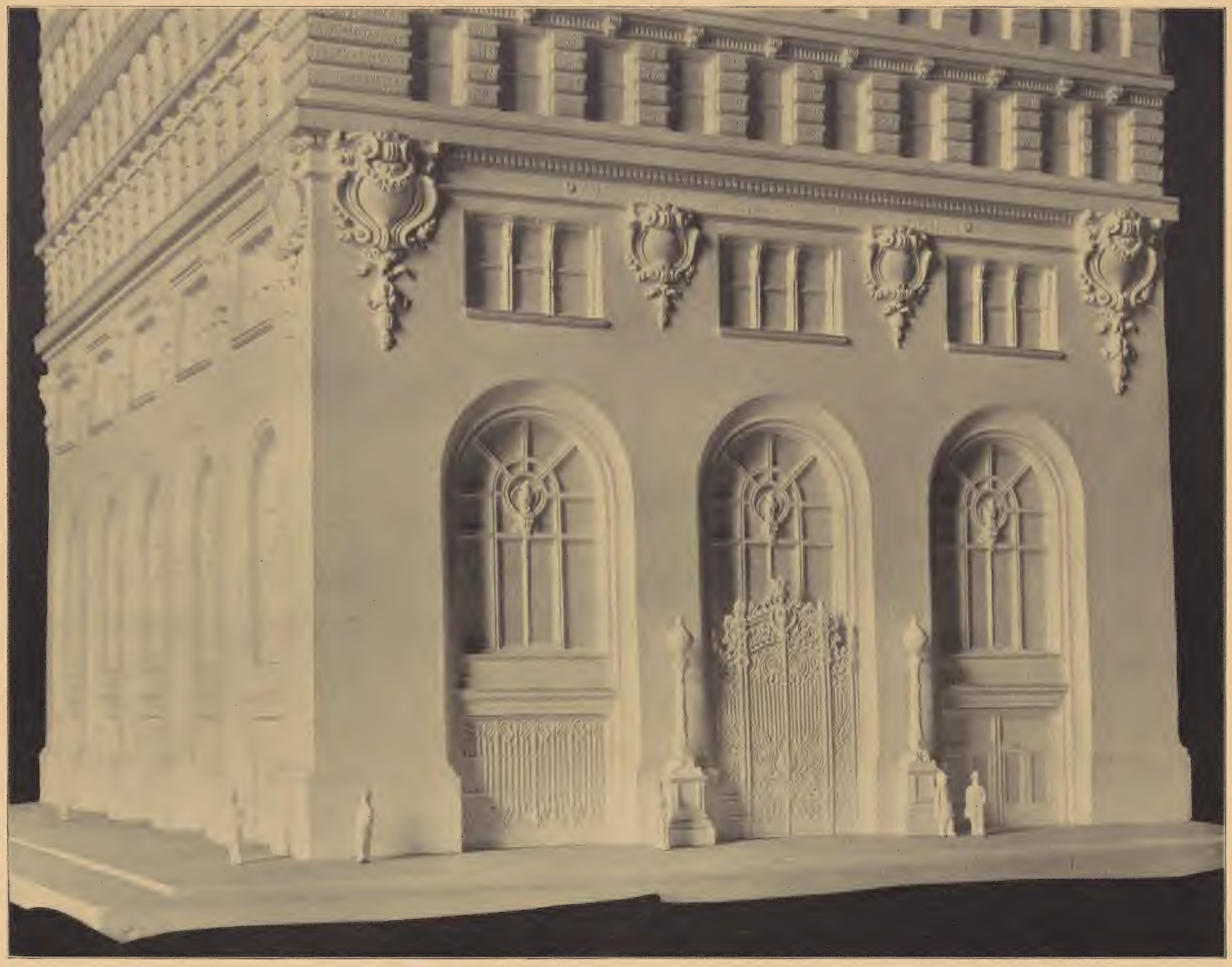
D H. BURNHAM & CO., ARCHITECTS OLMSTED BROS., LANDSCAPE ARCHITECTS



FROM MODEL

AMERICAN TRUST AND SAVINGS BANK BUILDING, CHICAGO

JARVIS HUNT, ARCHITECT



FROM MODEL

DETAIL LOWER STORIES AMERICAN TRUST AND SAVINGS BANK BUILDING CHICAGO

JARVIS HUNT, ARCHITECT

RESIDENCE FOR PETER THOMSON, COLLEGE HILL, O.

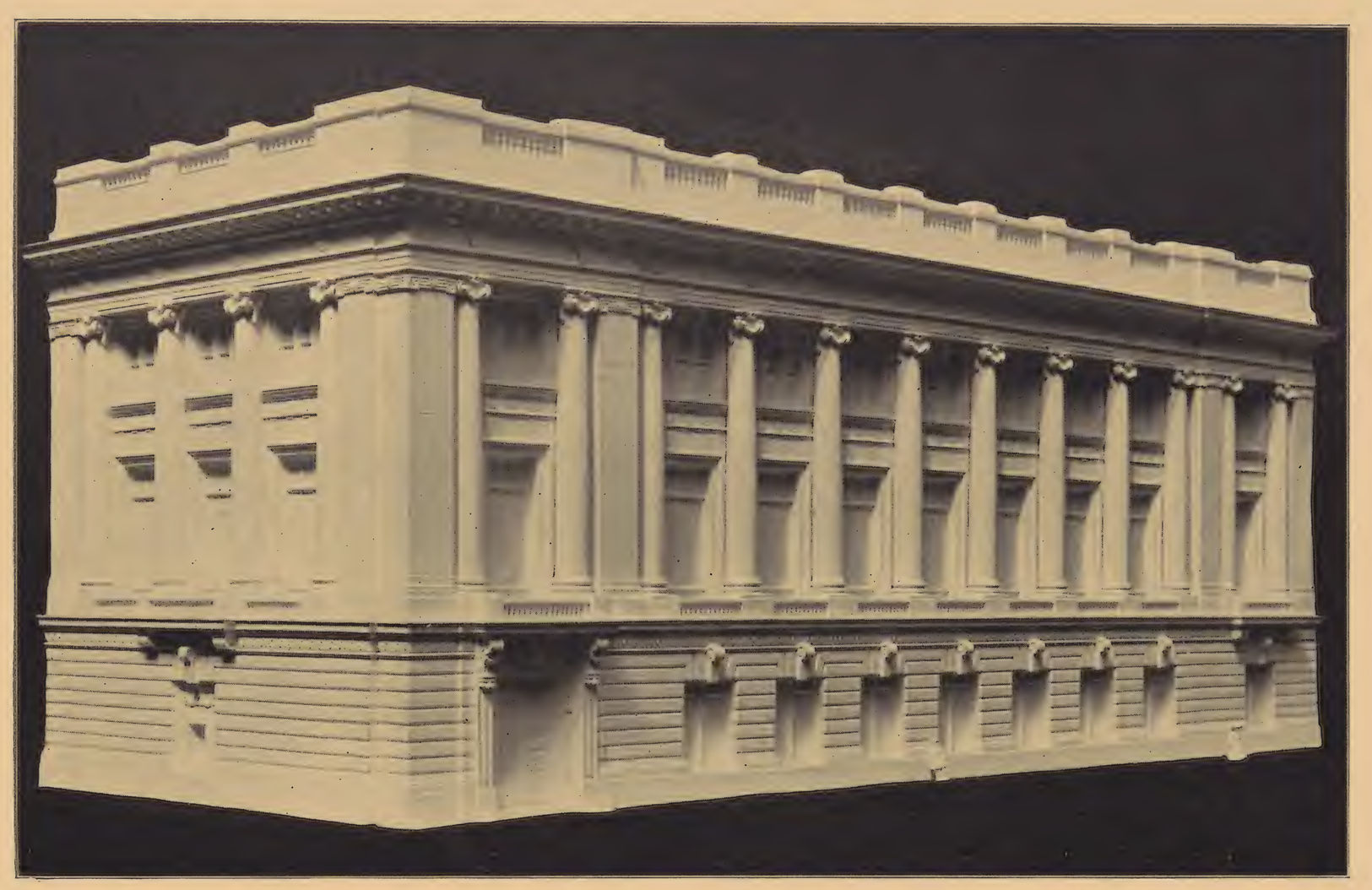
JAS. GAMBLE ROGERS, ARCHITECT, CHICAGO

RESIDENCE FOR EDWARD F. ROBBINS, 2126 PRAIRIE AVE., CHICAGO

MANN, MACNEILLE AND LINDEBERG, ARCHITECTS, NEW YORK AND CHICAGO

THE BORLAND OFFICE BUILDING, CHICAGO

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS



BANK BUILDING FOR THE NORTHERN TRUST CO., CHICAGO

FROST & GRANGER, ARCHITECTS

RESIDENCE FOR JOHN B. DRAKE JR., 2106 CALUMET AVE. CHICAGO

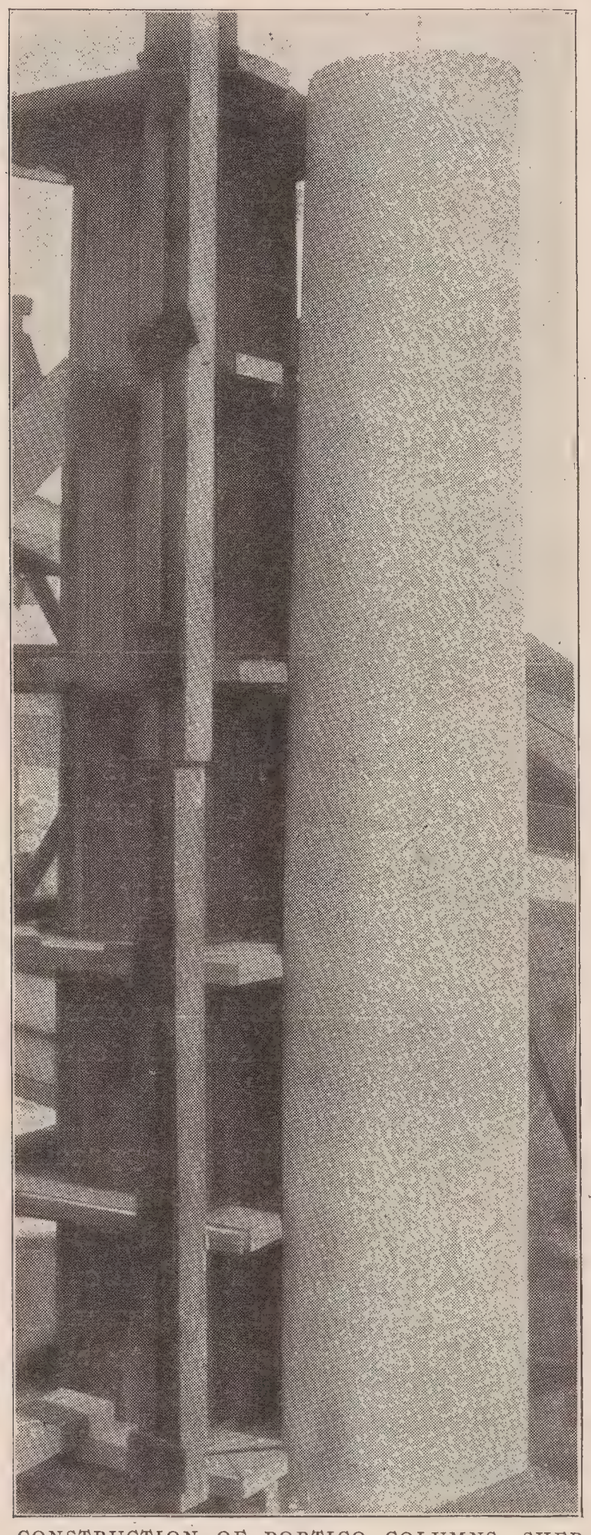
HOWARD W. SHAW, ARCHITECT

RESIDECE FOR H. W. MALLEN, OAK PARK, ILL.

GEORGE W. MAHER, ARCHITECT, CHICAGO

SMALL PARKS IN CHICAGO

THE public park systems of Chicago, of which there are three—South, West and North—are governed by boards of commissioners appointed by the Governor of the State of Illinois. Since the organization of these three park systems previous to 1870, the work has been largely in the direction of establishing parks of several hundred acres in extent in the environs of these districts and connecting them by boulevards, the city being now completely encircled by a boulevard and intersected by several.



CONSTRUCTION OF PORTICO COLUMNS, SHERMAN PARK FIELD HOUSE.

With the rapid increase of the city population and, in consequence, large and congested districts growing up wholly devoid of open air and breathing spots, the necessity for small parks, centering as much as possible these districts, was recognized, and a law was passed by the legislature authorizing an issue of bonds permitting the park boards to extend the park system, with a direct bearing upon the construction of small parks.

Of the fourteen sites for new parks and squares selected by the park commissioners, eleven were acquired and ready for improvement early in the year of 1904. The work of improvement was at once entered upon and the grading of five of the squares and five of the parks is practically completed and the buildings in these areas are also nearing completion.

Not only has the grading been practically finished, but most of the planting has been done; the water pipes and drains have been laid and the walks and drives practically finished. The fences are under construction.

The following is a list of the ten new squares and parks, the improvement of which is practically completed: „ ,

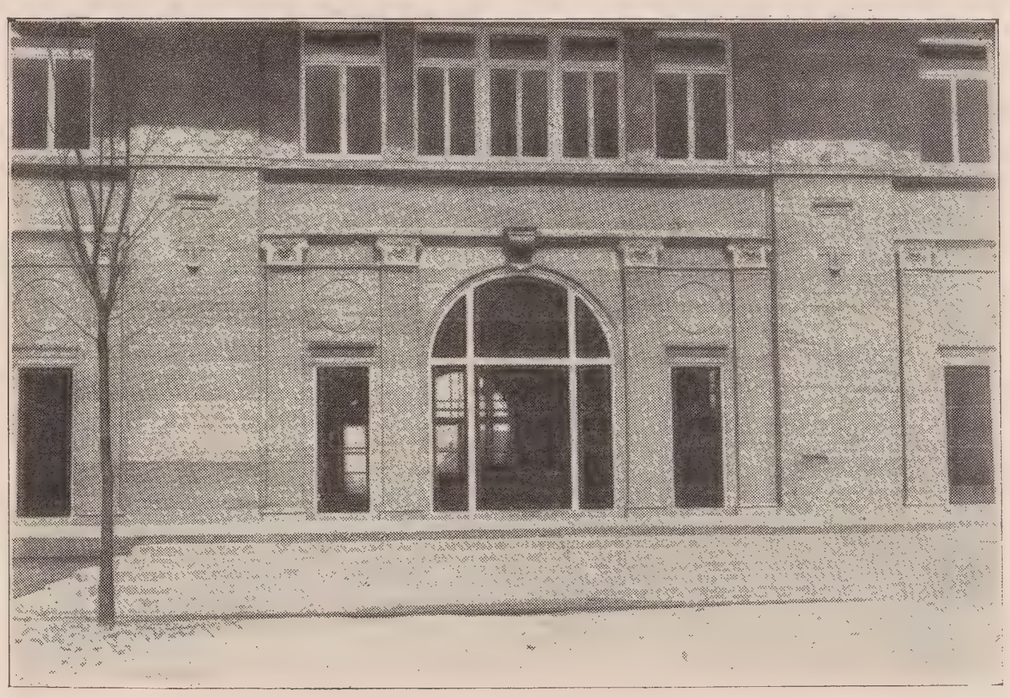
NAMES.	ACREAGE.
Palmer Park	40.48
Mark White Square	10.00
Armour Square	10.00
Cornell Square	10.00
Russell Square	6.57
Davis Square	10.00
Sherman Park	60.60
Ogden Park	60.54
Hamilton Park	29.95
Bessemer Park	22.88

Marquette Park, 322.68 acres, gross area, located at Sixty-seventh Street and Kedzie Avenue, has been improved by laying main water pipes and by the establishment of a nursery in the southwestern portion. This nursery contains 80,875 trees and shrubs for the future development of the park system.

Two of the houses which were on the property when it was purchased by the park commisioners have been altered at slight expense to serve as golf shelters, and an eighteen-hole golf course has been laid out, and was graded in the summer ready for use by the public.

There having been an excess of excavation of about 30,000 cubic yards in Sherman Park and a deficiency of a like amount of filling in Ogden Park—a mile and an eighth away—an equipment of small locomotives, cars and track was leased from the City of Chicago for cheaply and quickly transporting this material from one park to the other.

A contract has been made for furnishing the gymnasium apparatus for the equipment of the gymnasiums in the buildings in the five squares and five parks. Bids have been received for the lockers required, and arrangements are being made for placing a contract for the equipment of the



DETAIL OF ENTRANCE, HAMILTON PARK FIELD HOUSE.

outdoor gymnasiums. All of these squares and parks, with their buildings, swimming pools, gymnasiums, reading rooms, refreshment rooms and assembly halls, were planned to be available for the use of the public early in the spring.

This action of the park boards was not spontaneous by any means but was the outgrowth of years of agitation by civic bodies and private individuals who saw the need of recreation spots for the immense population utterly devoid of any such privileges as these parks would give. The stock yards neighborhood, the steel plant region and other districts, each with a population of one hundred to one hundred and fifty thousand, were both remote from existing parks. It was urged by the many advocates for small parks that almost the entire physical, moral and mental welfare of these people depended on the advantags which the parks

SWIMMING POOL AND GYMNASIUM, ARMOUR SQUARE FIELD HOUSE.

would give, developing civic pride, a desire for cleanliness, stimulating ambition and allaying the discontent that the congested areas with the the attendant environment was a large factor in breeding. In the McKinley Park established last year, 121,625 men, women and children were given free baths during the season, 2780 taking advantage of this recreation in one day. This one feature of these parks is thus shown to be worth the entire outlay. In each park provision is also made for gymnasium work for men and women, both

FIELD HOUSE IN MARK WHITE SQUARE.

FIELD HOUSE IN HAMILTON PARK.

summer and winter. Each field house is divided and either sex has a fully equipped gymnasium with an accompanying plunge bath, lockers, resting rooms, etc. These interior gymnasiums are connected with outdoor baths and gymnasiums for use during the summer, but those inside are available throughout the year.

ENTRANCE DETAIL, FIELD HOUSE IN ARMOUR SQUARE.

The gymnasium and bath are regulated by admission cards so that all can have an opportunity for enjoying them and no one monopolize their benefits. There is also in connection with each field house an outdoor swimming tank, some of these being as large as 100 by 150 feet, and these are also provided with necessary dressing rooms and accessories, there being no charge or fee for the use of any of these privileges and no restrictions except the regulating admission card and good behavior. The neighborhood center or field houses provide also for the intellectual and social life of the people, not only in summer but during the long winter evenings. The assembly hall of each field house is at the service of clubs and societies and for any other gathering, except those of a definitely religious or political nature. There are also club rooms for smaller meetings for all. As shown in the landscape plans, there are ball grounds, wading pools and sand piles for the little ones, and broad walks and shaded seats for promenade.

The first to make appreciable advancement in this work has been the South Park board, legal difficulties having retarded the work of the others until the present, the legislature having just taken the proper action to enable the work in these sections to progress. In 1903 two small parks were established and in 1904 the above ten parks and squares were commenced (those of ten acres or less being designated as squares), and these are now approaching completion, several of the buildings being open now to the public. Of the $1,204,190 expended on these ten new parks in the preliminary contract work, $13,000 was paid for landscape plans, (or $306 each for those of ten acres and $906 each for those of forty to sixty acres), $360,777 has been expended on the buildings which are designated as field houses.

The landscape work was placed in the hands of Olmsted Bros. of Boston and the field houses were designed by D. H. Burnham & Co. of Chicago. Thus the best possible work in both departments was secured. The sum involved in the design and construction of the field houses does not include walks, fences, lighting, water supply, or drainage, or the administration, engineering and superintendence. The structures themselves range in cost from $21,000 to $55,000 each.

The landscape features of these parks and squares are of great interest, showing the different solutions to the prob-

lem given by Olmsted Bros.; while the designs by Burnham & Company are of like variety, yet following one general style. (The plans of the eight smaller parks are given on special illustration pages in this number of the INLAND ARCHITECT.) It is in the unique form of construction that the special interest centers, for the structure of the field houses is entirely of cement concrete and is on the whole the most extensive construction work of the kind yet attempted in Chicago. This material was adopted because of its artistic effect rather than its cheapness and is only used structurally in the sense of walls and columns, the floors when there are any, being of ordinary wooden joist, and matched wood flooring and the ceilings of wire lath and plaster, as it is probable that from the nature of the contents no destructive fire could be produced.

In planning the construction of these buildings, the architects specified the mix as well as the material, which is sand and crushed stone. Below grade the concrete was mixed 1-2-4 and that used above was 1-3-3. The sand used was of ordinary fineness, and the crushed stone one-half and one-fourth inch, according to the purpose for which it was used. The walls were made by erecting forms of about six feet in height at a time of smoothed two by ten inch matched plank.

One of the most important problems before the architect

FIELD HOUSE IN ARMOUR SQUARE.

bracing for the forms, that adopted by one contractor being illustrated by a photograph taken during construction.

Where any relief ornament, mouldings, etc., were shown in the plan a mold was carved and attached to the inner surface of the plank. In cases where capitals or gargoils were used, these were moulded separate and set in the walls. In all other cases of ornament the walls were monolithic.

FORM CONSTRUCTION.

HALL IN ARMOUR SQUARE FIELD HOUSE.

in the designing of these concrete buildings, but which was left for each individual contractor to solve in executing the work, was the prevention of any tendency to "swing" during the plastic condition of the walls when they had reached an appreciable height. This called for an elaborate system of

HALL IN HAMILTON PARK FIELD HOUSE.

Of course this involved a great deal of labor and fine carpentry, and it is said that none of the contractors made money on the work because of their unfamiliarity with the requirements, as no elaborate designing in this material has been heretofore attempted on any considerable scale. It seems probable that in future work of this kind, architects will deem it advisable to use a still finer grade of crushed stone as many mouldings, as well as the finishing of plunge baths, etc., had to be done in Portland cement. It was noticed that the concrete was mixed dry while the cement was wet, almost to a flowing consistency. In some of the buildings cracks have appeared, but this is possibly due to settlement, as many of the structures were erected on filled ground. As a whole these cracks are unimportant and do not argue for expansion joints. Some very fine examples of timber roof trusses are seen in several of the buildings. The material used, especially for sills and heavy flooring, is Oregon pine and is without knots.

All wires for electric lighting or telephones are inserted in the walls and the buildings are reached by them by underground conduits, the wires showing in the illustrations being for temporary use. The columns, both interior and exterior, are of the same material as the walls and were formed in jackets made of inch strips and accurately follow the lines of the design.

The accessories to these field houses are unusually com-

plete. In the locker rooms, standard lockers are used, and the equipment of the gymnasium is similar to that of any well appointed athletic club. The space given to ladies both in the plunge bath and gymnasiums is equal to that of the men, and instructors are provided for each. The card system adopted will secure to each an equal share in the privileges. The outdoor bathing pools are varied in size and depth, but all give ample accommodation to the crowds that will make use of them in the summer. These are built of concrete of the same mix as the below grade walls and are finished with asphalt. In effect the scheme of color in the design seems all that could be required. The gray walls and the white framed windows, large tiles of the roofs, green colored and projecting in ample cornices, the surface broken by dormer-like ventilators—all harmonize with the gray cement walks and green borders and lawns of the surrounding park. When finished it is certain that Chicago will possess the latest word in small park architecture as well as in the solution of the problem of sanitation and physical and mental growth of the people of the poorer neighborhoods.

FOUNDATIONS FOR LARGE BUILDINGS (continued)

By James N. Hatch, C. E.

FOLLOWING the Home Insurance building, all the tall buildings in Chicago were constructed on a skeleton steel frame. With this style of design there was no necessity of the interior walls being carried below the first floor. The basement could therefore be used to good advantage if it were not all taken up with wide spreading footings, as was the case in the Home Insurance building. The building designers therefore began to cast about for some way of getting the desired width of footing without using all the basement area, and at the same time keeping the footing near the surface of the ground. The first effort in this direction was made by using concrete instead of cut stone and imbedding old railroad rails in the bottom course, so that a thinner footing of concrete could be used. A trial of this use of steel imbedded in concrete proved so successful that it was adopted as a standard method of constructing spread foundations. Instead of one layer only, three or more layers were used, crossing each other at right angles, and permitting a very shallow and very strong footing. Instead of railroad rails it was later found that the regular I-beam section was still better adapted for footings. The I-beam has been used almost exclusively in steel grillage foundations since its introduction. When it is not necessary to punch these beams a steel of very high tensile stress may be used, allowing an economy in the amount of steel required.

With this improved system there was so much saving in basement area that it readily permitted the addition of another story to the building with the same depth of excavation, and no additional weight upon the underlying soil. A pier made of steel beams and concrete is considerably more expensive than one constructed entirely of masonry but the added available space much more than compensates for the extra expense. The beams if properly imbedded in the concrete are practically indestructible.

This method of making a substantial foundation for very heavy loads proved so satisfactory that it was adopted for various kinds of foundations all over the country, and where the earth is fairly firm and dry it has proved a most admirable arrangement.

Some of the largest and heaviest buildings in Chicago are resting upon these grillage beam foundations and are standang well. Notable among these is the Monadnock building, about two hundred feet above the curb. The pressure on the earth foundations was calculated to be 3,750 pounds per square foot. This building was built in two parts, the north half was constructed several years before the south half and was called the Monadnock building. This part of the building settled about four and a half or five inches but did not become perceptibly out of plumb. When the south half was added it was at first called the Waushusett building. From the amount that the Monadnock building had settled as a known quantity the probable amount that the Waushusett would settle was calculated. This amount having been determined the Waushusett building was constructed with all floors and ceilings this amount above those of the Monadnock building, with the joints so arranged as to allow for settlement. The strange part however, is that the difference in elevation between the two buildings still exists and may be seen when passing down the main corridor. Either the Waushusett has not settled as was expected or the Monadnock has continued to settle at about the same rate The settlement throughout the building seems to have been so uniform, however, that there is no apparent damage to the structure. No cracks are visible and the walls seem to be plumb.

The Masonic Temple, built in 1892, was another bold step into the unknown. It was at the time of its erection the tallest regular office building in the world, being the first solid twenty story building ever constructed. Not only was it remarkable for its great height, but for the small base as compared with the height. The dimensions are 113 by 170 and 278 feet high. Standing on the street corner and near the lake front, it is subjected to the most intense wind pressures. This building is carried on piers of grillage beams and concrete resting directly on the soil. The setlement has been considerable but has not as yet shown any damaging effect upon the building, although it is several inches out of plumb. Those who have been watching the action claim that there has been no change in the building for several years.

The Fisher building, built in 1895, is another structure in which the height is much greater than the width or breadth. The dimensions of this building are 80 feet by 100 feet, and 220 feet high, making the height nearly three times the east and west dimension. An effort was made in the design of this tower-like structure to arrange the foundation so that no settlement would occur. It was believed that the cause of settlement was the squeezing of the moisture out of the earth due to the pressure of the superimposed weight. And it was decided that if a great number of short piles were driven close together, thereby thoroughly compressing the soil and forcing the moisture out, no settlement could occur. Acting on this theory piles about twenty feet long were driven close together under each grillage footing. But it is only too plain to the most casual observer that this has not accomplished the desired end, for not only has the building settled several inches but the settlement has been so much greater on the east side than on the west side that the building is about a foot out of plumb at the top and the settlement seems to be still continuing. It is a question whether it will not yet be necessary to have this building jacked up, and a new set of foundations placed beneath the columns: Concrete piers could be placed one at a time beneath the present piers, without running any great risks.

The Old Colony building, which is 215 feet high, is located just across the street from the Fisher building and diagonally opposite from the Monadnock building. This was the first building in Chicago in which cantelever foundations were used. On the adjoining lot on the south, was an old building with the center of the party wall on the lot line and the footings extending several inches inside of the Old Colony property. No satisfactory arrangement could be made for placing new footing on the line which could be used for both buildings, so the footings were placed 4 ft. 3¾ in. inside the lot line and the outside wall carried on a box cantelever. The pressure on the earth exerted by the footings of this building was 3,200 per square foot as calculated by the designer. After nine months the average settlement of all piers was about 4 3-16 in. with a maximum variation of about one inch. There is no apparent damage from this settlement, in fact this difference in levels cannot be detected in the finished interior. The entire building seems to have settled practically even.

The Unity building, on Dearborn Street between Washington and Randolph Streets, is another example of uneven settlement. This building has settled to the eastward several inches out of plumb. This is another structure which is being watched with considerable interest as to the final outcome of this uneven settlement.

The Chicago Opera House building was built on floating

foundation, but wells were afterward dug beneath the building down to hard pan and concrete piers were substituted for the grillage footings.

The Western Bank Note building on Michigan Avenue is on floating steel grillage footings resting on quick sand overlying the clay. This building settled about 2½ in. soon after erection, but does not seem to have been damaged.

The Marquette building was designed so that an additional building of the same size could be joined to the present building on the west. As the loads which would ultimately come on the columns along the present west wall would be much greater than the present loads, and as some of the columns now carry only half their future loads, and some three quarters, and others other proportions, some provision was required to guard against uneven settlement when the new building should be added. This was arranged by building in a hydraulic lift under the columns in question, by which these columns can be raised or lowered when the necessity arises. It is said that preparations are being made to construct this addition in the near future, and it will be interesting to see whether or not this provision is made use of. I will venture the opinion that the new portion of the building will not be placed on floating grillage footings.

The Great Northern hotel building is provided with a somewhat similar arrangement except that in this case the entire east wall rests on jack screws. It was feared that when the newer part of the building should be added there would be uneven settlement here, which would prove detrimental to the hotel building. To provide against this the jack screws are so arranged that at any time any part of the building may be raised or lowered as circumstances may demand.

The Hartford building settled considerably when the footings for the Tribune building were being constructed.

The Fair building was designed for an eleven story building but was built only eight stories high. It is on a rail grillage and settled about one inch. Now that additional stories are being added it will probably settle more. The Fair was one of the first skeleton buildings erected in Chicago.

The Auditorium hotel building is supported on beam grillage foundation. This building has settled rather unevenly in spite of the greatest precautions which were taken in the construction to prevent this. To guard against an uneven settlement between the tower and the adjoining portions of the building, an ingenious method was used. It was believed that as the tower would be the last part up, the other portions of the building would have their full load while the tower footings were only partially loaded, and that this would cause the building to settle more than the tower, and that afterwards when the tower was built up to its full height, it would then have an equal load with other parts of the building and would then settle further. To obviate this the tower footings were loaded with pig iron, which was removed as the walls were carried up. In this way the footings under the tower always bore the same relative load as they were designed to have when the entire building was finished. But even with all these precautions the walls are cracked down each side of the tower. This only demonstrates again the impossibility of calculating the exact distribution of loads upon foundations, or at least the exact action that will take place among a number of footings.

With the growing use of reinforced concrete there are a number of designs being advocated for spread foundations made with concrete and reinforcing bars, without the use of any beams. This has been used in several large office buildings and seems to have given good satisfaction. It is claimed that a cheaper foundation can be made in this way than with beams, and that the amount of room occupied by the footing is considerable less.

On soil that is too soft and yielding to bear heavy structures in safety, piles have been used since time immemorial and have been found very satisfactory as permanent foundations. There has always been some dispute among Chicago experts as to which class of soils the ground underlying Chicago belongs to, whether to that class that may be depended upon to carry heavy loads without danger of undue or uneven settlement or whether to that class which should be piled. Some eminent foundation experts have always contended that it was a risky venture to place immense buildings on floating foundations on Chicago soil.

Piles driven to hard-pan have proved excellent foundations wherever they have been used. There are a number of prominent buildings having pile foundations and the number is increasing rapidly. A foundation in which long piles are used is more expensive in first cost than a grillage foundation but is certainly much more secure. Much care is required, however, in driving and capping piles so that all loads will be properly balanced. Chicago has examples of both good and bad pile foundations. The Cook County court house is a flagrant example of a poorly constructed building on a badly constructed pile foundation. This building is supported on piles which were supposed to have been driven down to an unyielding stratum and the amount of money expended on the foundation was sufficient to have made a setting that would have lasted a thousand years; the piles, however, were carlessly driven, and the foundations were not placed upon them properly and as a result the building has settled a foot or more in some places, putting it in a dilapidated condition. The fire which occurred a few months ago in the interior of the building was said to have been caused by a recent settlement which caused leaks in the gas pipes. The exterior walls are continually crumbling away and it is necessary to keep men cutting away and lowering portions of the cornice and other projecting parts to protect passers-by from receiving these loosened missiles on their heads. It will not be long before this monument of corruption must be condemned as unsafe, as well as unsanitary and altogether loathsome.

The city hall, built after very similar plans, cost about one-half as much as the court house and as far as foundations are concerned appears to be permanent and safe. There are some evidences of settlement showing incipient cracks but these are not of an alarming character.

The Chicago public library is built on piles and is beyond reproach in respect to solidity. After a few piles were driven they were tested by loads of pig iron. A load was concentrated upon the top of one pile and was gradually increased during several days until it had reached fifty tons. This load was left for several weeks and after the first settlement due to the compression of the wood there were no signs of settlement whatever.

The safe load generally recommended for piles on hard-pan is about thirty tons per pile. The Chicago city ordinance requires that this load shall not exceed twenty-five tons. Care should be taken to have all piles cut off below low water level. Wood kept continuously wet will last indefinitely. Old piles that have been taken from ancient works in Europe show no signs of decay after two thousand years of service.

The new post office building (I pause to explain there is no intentional connection between this and the ancient works mentioned above), now under process of construction, rests on 5,087 piles driven to hardpan. These piles were figured to carry a load of 25 tons each. This foundation, as well as that of the public library just described, was designed by General William Sooy Smith.

The Stock Exchange building rests on piles, except along the west side. There it was feared that the driving of piles would disturb the foundation of the Record-Herald building, immediately adjacent, so that a number of concrete piers were put in along this side.

The tallest building in Chicago, that of Montgomery Ward & Company, has a pile foundation. The tower of this building is forty feet square at the base and 390 feet high. The piles are fifty-two feet long, the bottoms being sixty feet below the curb. These piles were calculated for a load of twenty-five tons each.

The La Salle Street station, the Schiller theater, the Iroquois theater, and a number of the newer buildings, have pile foundations. Most of the warehouses and bridge piers along the rivers are supported on piles.

The introduction of concrete piles promises well for the future, although I am not aware of any having been used in the business district of Chicago. These offer the advantage that it is not necessaary to go down below water level with the capping. In some cases this constitutes a very

considerable saving. The Raymond concrete pile is made by driving a dummy pile with a collapsible core. When this is driven to the desired depth the core is withdrawn leaving a sheet iron shell about two feet in diameter at the top and six inches at the bottom. This shell is then tamped full of concrete, making a concrete pile. Sometimes a paper shell is used instead of sheet iron. There are several styles of concrete piles which are moulded on the surface of the ground with a steel reinforced core and driven in the same manner as a wooden pile.

The third method of securing a firm foundation for heavy buildings is that of concrete piers resting on hard-pan, or on bed rock. In this style of foundation a well is dug down to hard stratum. This well is kept shored up by means of a circular tongue and grooved sheathing; this sheathing when in place resembles a heavy barrel with strong iron hoops on the inside. This casing is made in sections about six feet long and is put in as the work progresses. This well is generally belled out near the bottom to obtain a greater bearing on the soil. When the well has been completed and the underlying stratum properly leveled off to receive the footing, the well is tamped full of concrete, and the building column placed on the top of this concrete pier. This pier is sometimes called a concrete pile and really serves the same purpose as a pile, except that it is much larger, being generally five feet or more in diameter. In some heavy buildings in New York the steel columns of the building have been carried clear to the bed rock, and the well bricked up around the column to the top. So far as the writer is aware, this method has not been used in Chicago.

This method of concrete piers, or caissons, is coming into very general use in recent Chicago buildings, and is, the writer believes, the best method yet devised for any building two hundred feet high or more. There are a number of advantages in this style of foundation, one of which is that the wells can be dug and the piers and footings prepared all ready to receive the new building, before the old building is abandoned. This method was employed in the Schlesinger & Mayer building and also in the addition to the Hartford building. In both of these buildings temporary elevators were arranged through the sidewalk. The wells were dug one at a time, beneath the old building while it was still occupied. The excavated material was carried to the front of the basement, placed on the elevator, taken up high enough to be dumped into wagons which were placed beside the curb, and thus removed without attracting much attention. In this way the foundations were entirely completed before the tenants in the old building were disturbed. This means a great saving in time and consequently a considerable saving in revenue; for as soon as the old building is removed, all is ready for the erection of the new, with no loss of time for placing the foundation; and no danger of delay from storms, etc.

(To be continued.)

THE GROUPING OF PUBLIC BUILDINGS*

ANY discussion of the grouping of public buildings would be incomplete without a word in reference to a city plan. No less than eighteen American cities are seriously considering a more or less extensive modification of their present city plan. Still others are interested, and hardly a month passes without the appointment of a commission in some important city to consider this question.

The incomplete and unfortunate transit system adopted in many of our great cities has led to a congestion which has made impossible the intelligent consideration of the grouping of buildings, either public or private. As a result we find city after city taking up the questions of playgrounds, parkways and park spaces. This movement, either consciously or unconsciously, is an endeavor to mitigate the evils of the transit system. The Boston park system is well known. The efforts in Philadelphia are assuming concrete shape. The recent report of the Metropolitan park system in Chicago is filled with interesting suggestions for its future development. And so we might go from city to city and find that if a city plan has not been taken into consideration, at least some determined effort along the lines of park improvement is in progress.

The question of the grouping of public buildings must at least take the third place in importance in the discussion which is now pending. It is true that we have concrete examples of work projected as in St. Louis, and of work actually undertaken as in Washington and Cleveland; but still it must be admitted that the interest in the grouping of public buildings is of minor importance compared to the question of city plan or the development of a park system. It is, however, none the less worthy of consideration.

A group of public buildings must of necessity be placed around some public square, park, or open plaza. The location should be governed by the desire to make such a space an integral part of a logical city plan.

It is a mistaken idea in the discussion of the grouping of buildings to consider that this subject applies simply to important municipal buildings. The principle should apply to markets, schools, libraries and semi-public buildings such as theatres, churches, etc. In commercial development there is a distinct tendency to bring together commercial houses carrying on similar lines of business. Why should not the same principle govern the location of public and semi-public buildings?

At the present writing no one disputes the grouping of public buildings, but the difficulty lies in the question of the expense in obtaining the necessary open spaces. From all parts of the land come inquiries as to how this problem is to be met. In its recent report the New York City Improvement Commission has suggested the remedy. It states that the cost to the city may in many cases be greatly reduced.

"If the city had the power exercised in many European cities of condemning more than the area actually required, the city might reap the benefit to be derived from the enhanced value of neighboring property, and in the judgment of the commission steps should be taken to secure such changes in the constitution and legislative enactments as may be necessary for the purpose. This method of taking more land than required, with the object of resale at an advance of recouping part of the expense, has been applied in various large cities of Great Britian and the continent where extensive alterations have been undertaken for securing architectural effects, remedying sanitary conditions or improving the city generally, and it is questionable whether many of the improvements would have been otherwise accomplished."

It is contended that this principle is dangerous, and that the city would be forced—so to speak—to go into business. As a matter of fact, most cities have been in business for many years, for revenue is obtained from the public investment in docks; certain return is obtained from the water supply; and inadequate compensation is received from transit lines and subways. In fact, instance after instance could be given where in minor matters, cities in this country have carried out this principle. Some important foreign examples may be cited:

In Holland many acres of land are constantly being rescued from the sea. This land is sold and the returns more than compensate the government for the expenditure incurred.

In London the Shaftsbury Avenue improvement was made possible by the following of this principle.

"Large as this amount appears and undoubtedly is, it is comparatively insignificant in view of the enormous benefit which resulted financially to the city from the improvement. The amount collected in twenty-five years on the property of the three wards named (the wards contiguous to Central Park) over and above the ordinary increase on the tax value of real estate in the rest of the city was $65,000,000, or about twenty-one millions of dollars more than the aggregate expense attending and following the establishment of the park up to the present year. Regarding the whole transaction in the light of a real estate speculation alone, the city has twenty-one millions of dollars in cash over and above the outlay, and acquired in addition thereto, land valued at two hundred millions of dollars."

The improvements of the Ringstrasse in Vienna is a case in point. Example after example might be given, but they would simply reiterate the idea already emphasized.

If, however, the radical suggestion made by the New York City Improvement Commission should seem to many, at least, too advanced to be possible of adoption at the present time, it is still true that statistics show that much of the park area already established has paid for itself. In a report of the commission appointed to secure an extension of the park area in the City of New York, we find the following facts: The total cost of Central Park was $43,794,150.00.

The experience of Chicago may be quoted as another example. "The establishing of parks has had the immediate effect, upon adjacent lands, of doubling and quadrupling property."

The Commissioner of the Boston Park Department, referring to this question, says:

"With regard to the influence of public parks on the neighboring real estate, no recent figures have been made. In 1890 the board published a statement of the increase in value of the Back Bay lands since the establishment of the park. By this table it will be found that the land alone was trebled in value in thirteen years, while the valuation of land in the rest of the city during the same period increased only eighteen per cent. The increased taxes on this land, without including the buildings erected, aggregated over two million dollars—a sum more than sufficient to pay the entire cost of the improvement at that time. The increased taxes on new buildings erected on these lands yielded one and one-half millions more of revenue."

The park movement, as has been before stated, was the result of necessity. "The physical well being, comfort and health of the public demanded that open spaces should be provided convenient for public use."

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*Paper read before the fifth convention of the Architectural League of America held at Pittsburgh April 17, 1905.

If this is true of parks located as most of our parks have been located, without intention, how much greater would be the result if in all of our cities, park spaces should be selected with reference to the business as well as the aesthetic interests of the community. Too strong emphasis cannot be placed upon this point. Every acre of land devoted to public use should be so placed as to give a maximum result for the money expended. When, as has been shown above, such improvements can be made self-supporting, why should our cities hesitate to have these open spaces without which the grouping of public buildings is an impossibility.

The importance, not only of the judicious location, but the intelligent planning of such spaces, cannot be too strongly emphasized. While it is true that there is hardly an exception to the statement that such improvements have been of financial value to the cities making them, cases might be cited where the value of the improvement was lessened by injudicious location or design.

Thus the use of the circle with a central monument, in vogue in some of our cities, gives a maximum of waste for a minimum of result. There is waste of land where the circle lots deepen, and the central monument acts as an obstruction for the traffic of intersecting streets.

Experience in the placing of parkways or broad avenues has in many instances emphasized this point. If a street is too wide, it defeats the purpose for which it was planned and drives away the desired residents. Similar examples may be given to show that where streets have been narrowed from say one hundred feet to half that width, great improvement in the section has resulted. The same principle is applicable to the spaces designed for the grouping of public buildings. If too large, they defeat their purpose and accomplish the reverse of the desired result.

The grouping of minor buildings which in foreign cities are public, while in our own cities are, in many cases, private, should not be forgotten:

The market in each arrondissement in Paris is a suggestion of what may be done in our American cities. An excellent example of this idea carried to a successful completion is the Wallabout market in the borough of Brooklyn, New York. Here an extended area secured from properties reservd for the navy department by the U. S. Government was secured, a scheme of development planned, and an architectural design adopted. The result is in every way most satisfactory. Private ownership is permitted, but under such restrictions, that the buildings in every case bear proper relation one to the other. Improvements may be carried out from time to time, and when completed, the scheme will be an excellent example of the grouping of buildings of this class.

The Gansevoort markets are on similar lines, but less successful, and many of the markets in many of our cities are so placed as to not only be of no value to the city in which they are located, but are handicapped in carrying out their specific functions.

Docks and the necessary storage buildings have as yet been hardly considered in this country as coming under this heading. But in Hamburg results have been obtained which are not only satisfactory from the aesthetic point of view, but which from practical experience have been proven of inestimable advantage to the city in the transaction of its business.

In Antwerp recent changes have been effected along similar lines. Is it therefore too much to expect that our American cities with improved water fronts, will consider this treatment of buildings of this character?

Even theatres and hotels have of their own volition endeavored to benefit by this principle of grouping and in old Long Acre Square—now the Times Square—borough of Manhattan, New York, we have a concrete example. It is true there are no restrictions as to the height of buildings, nor as to their architectural style, but the result obtained by unorganized private effort is an earnest of what might be done under public regulation. There is no good reason why buildings facing a public square or open space, should not be subjected to definite restrictions both as to height and style.

Educational buildings are more fortunate, and we find group after group, from the great university buildings of the Pacific coast, the college buildings of the middle West to the school group in the more densely populated Eastern cities. The Leland Stanford University, the projected University of California, the University of Chicago, the University buildings of St. Louis, to such admirable high schools as the Morris High School, the Wadleigh High School and the Erasmus High School of Manhattan and Brooklyn, are but a few of the many examples which might be cited.

Libraries and museums have a natural affiliation. Even charitable and philanthropic institutions are located in close proximity because of similar interests.

The importance of grouping public buildings has within the last few years been so frequently emphasized that repetition is needless before such an organization as this. It may not, however, be out of place to give a short resume of the main points:

The cost of grouping public buildings would be no more, in fact, might even be less, than building them upon separate unrelated sites. The city has its squares, its parks, and its public buildings at the present time. Why not bring them together, increasing their efficiency and at the same time, give them added value in the beauty obtained? Why should we build one public building, increasing the value of contiguous property, and at a later date purchase this at an advanced rate, for more public buildings? Why should parks or open spaces be created at a maximum expenditure, and then within a short space of time, sites be purchased facing these parks at an advanced rate for the realty, for libraries, public schools, fire-houses, etc., etc.? Is there any economy in this line of procedure? Would it not be better to purchase sufficient land at the outset and thus secure for the city the advantage of the enhanced values to be derived from its partial or complete improvement?

From the aesthetic point of view nothing is more important in the planning of a city than the grouping of its public buildings, and even the architectural style and treatment of such buildings must be subordinate to their proper placing.

In Berlin this point is markedly emphasized in the site where, centuries ago, stood the castle, the cathedral and the market place. At the present time apart from the imposing monument of William the First, there is the Royal Palace, the new Cathedral, the old Museum, the new Museum, National Gallery, Olympian Museum, Pergamun Museum, and other buildings now being added, or to be constructed.

On the parkway—the famous Under den Linden—there are public buildings without number. This parkway connects the civic center already mentioned with the Thier Garten and that famous group in the Koenig's Platz from which may be seen the New Reichstag and the wonderful Sieges Allee.

Another example is the site of the old Gendarman market where the Royal Theatre in the center is flanked to the right and left by the French church and the new church, forming an imposing architectural group. It has been well stated that "the direction in which Berlin excels is in the grouping and arranging of her public buildings."

Compare any American city with its unrelated public structures to the remarkable result obtained in Berlin. The comparison brings home the conviction that the grouping of buildings is more important than their architectural style or detail.

Berlin has accomplished this result in spite of the handicap of a very inferior city plan. What could be accomplished by our American cities, starting, as they might, with a plan suited to modern requirements? By following out a logical plan, made in advance for future needs, possible of extension from time to time, wonderful results might be achieved at slight expense.

Examples of the grouping of public buildings might be given from Vienna, Budapest, Prague, Strasburg, Brussels, Antwerp, and many less well known European cities. It is hardly necessary to mention Paris, except for the fact that its most important achievements in this respect have been accomplished in recent years. It is true that the Louvre is a civic center in itself. When the Tuilleries were destroyed by fire during the Commune, instead of rebuilding this last side of the square, a beautiful park was introduced, and that great vista, extending to the Arc d' Triumph, obtained. The Trocadero with its admirable buildings is well known, and now, as an inheritance from the last great exposition, Paris has the Grand and Petit Palais, the Alexandre bridge, and the great vista of the Esplanade des Invalides to Les Invalides itself.

The square or rectangle is not a necessary requirement to the grouping of buildings, the triangle, the eclipse, the diagonal intersection of boulevards, in fact any shape which comports with the city plan may be successfully used for this purpose.

Nor is it necessary that one architectural style should obtain throughout the entire group. Modifications of the same style or styles derived from the same sources, could be used with artistic betterment. The charming buildings at Heidelberg are a case in point. The interesting result obtained in Canterbury Cathedral by the retention of varying styles of Gothic, from the early round arch construction to the later more florid development, proves the artistic possibilities of this contention.

There can be no doubt in the mind of the student that conditions obtaining today in our civilization and development, will undoubtedly produce great results; and that these results must have adequate constructive and artistic expression.

Many of the civic centers of Europe have been created around the old market place. The spirit of the middle ages is to be found in the grouping of their public places. It was the republicanism of the free cities, the individualism of the twelfth and thirteenth centuries, which produced these results. After a lapse of centuries we see these factors again reasserting themselves with renewed vigor. Is it then possible that they will not express themselves? Is it possible that the professional ability of this country will permit that expression to be poorly conceived in plan, imperfect in construction and illiterate in artistic interpretation?

(*To be continued.*)

HISTORICAL*

THE history of the art of the locksmith is probably as old as the history of civilization, and references to it are found in the early literature of almost every nation.

Wherever and whenever property became individualized it is reasonable to suppose that means were desired and were devised for insuring its protection and privacy, and that thereupon locks in some form, however crude, came into existence.

To summarize, even briefly, the many records of the early phases of the art which are available would carry us far afield and entirely outside of the purpose of this volume, which aims merely to record the modern development of the art in the United States and to furnish technical information relating to it which will be of interest and use to the practicing architect, and perchance to his discriminating clients, and to the builder who uses and the dealer who handles the infinitely diversified product known as Builders' Hardware.

Those who are curious on the subject are referred to the generally excellent articles to be found in the larger encyclopelias and to the sources of information therein noted, and especially to a volume entitled "A Treatise on Fire and Thief Proof Depositories and Locks and Keys" by Geo. Price, published at London in 1856.

Not wholly to pass over the subject, however, we quote from the "Art Journal" of Messrs. D. Appleton & Co., an interesting historical sketch, giving also illustrations of some old locks and keys:

"The history of labor is the history of civilization, the scale of the progress accomplished, and the foreshadow of all future improvement. In no other way can a thorough knowledge of our own civilization be acquired than by looking back at the path mankind have passed over, and by examining all the footprints they have left behind.

NO. 1.

"It is impossible to ascribe to any certain epoch and person the invention of working in metals; it dates, however, from the prehistoric times, and all the oldest mythologies have a divinity to which it was attributed. Tubal-Cain of the Hebrews, and Vulcan of the pagans, seems to be only one myth, and the reproduction of old Hindostanic traditions.

"It is an accepted opinion that the art of the smith has its root in the right of property. As soon as the idea of **meum** and **tuum** entered the human mind, say the majority of writers, just so soon were the contrivances of this art called into requisition. We think, however, that its origin can be traced further back to an earlier age of the world, and to another cause. It is evident that, to provide against the attacks of wild beasts, man must have secured the entrance of the cave or hut in which he dwelt by some means or other. However rude, those manifestations of man's ingenuity foreshadow the contrivances applied later on to secure property. Wood was undoubtedly the first material employed in their construction, and very likely they were at first simple wooden bars and bolts. In fact, such is even at the present day the means by which many tribes of savages fasten their doors. Wood seems to have long filled the office of copper, brass and iron, even among civilized nations; the basso-rilievos of the great Temple of Karnac prove that the Egyptians used wooden locks even when they were at the height of their civilization. M. Bonomi actually found in the ruins of Ninevah a wooden lock

NO. 2.

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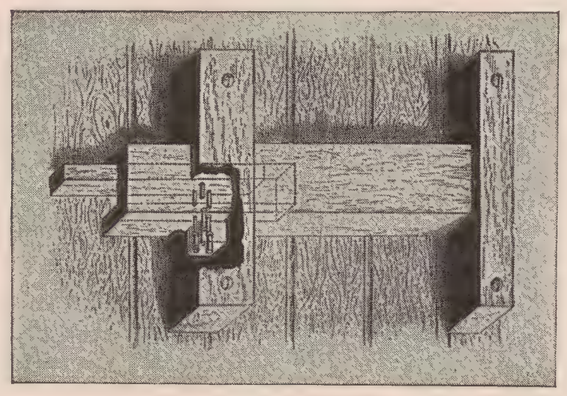
*An article forming part of "A Treatise on Locks and Builders' Hardware," by Henry R. Towne, president of the Yale & Towne Mfg. Co., and past president of the American Society of Mechanical Engineers. John Wiley & Sons, publishers. Price $3.00. It is the intention of the publishers of the INLAND ARCHITECT to publish other selections from this work. The book is profusely illustrated and contains more than 1,100 pages, 4x6½ inches.

which appears to have secured the gate of an apartment in one of the palaces of Khorsabad.

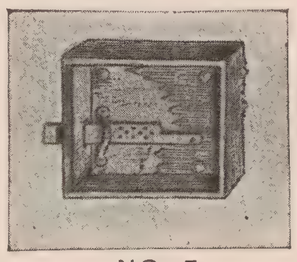


NO. 3.

It is the oldest lock yet discovered. 'At the end of the chamber, just behind the first bulls,' he says,** 'was formerly a strong gate of one leaf, which was fastened by a large wooden lock, like those still used in the east, of which the key is as much as a man can conveniently carry, and by a bar which is moved into a square hole in the wall. It is a key of this description that the prophet probably alludes to: 'And the key of the house of David will I lay upon his shoulder.' And it is remarkable that the word key (muphta), in this passage of Scripture, is the same in use all over the east at the present time. The key of an ordinary street door is commonly thirteen or fourteen inches long, and the key of the gate of a public building, or of a street or quarter of a town is two feet and more in length.' Cut No. 1 shows this kind of key, and No. 2 the mode of carrying it alluded to in Isaiah, and as practiced still in the east. No. 2 in fact represents a modern merchant of Cairo carrying the keys of his magazine, as given by Mr. Price in his work on locks and keys. The iron pegs at one end of the wooden key correspond to so many holes in the wooden bar or bolt of the lock, which, when the door is shut, cannot be opened till the key has been inserted, and the impediments to the drawing back of the bolt removed by raising up so many pins that fall down into holes in the bar or bolt corresponding to the pegs in the key. From a letter by W. C. Trevelyan, which appeared in the Journal of Design and Manufactures, for July, 1850, it appears that similar constructions are still in use in the Faroe Islands, as they have probably been for centuries.

NO. 4.

"Strange as it may seem, the principle on which this Egyptian lock is founded is almost identical with that of the modern lock of the most approved construction. By what process the Egyptian smiths arrived at the conception of such ingenious mechanism is unknown; at any rate, it supposes the previous existence of simpler forms, for the law that bids man pass from the simple to the complex is the ruling law of mental development, and the more we go back toward the primitive ages of the world the slower is the improvement. Of how many centuries of patient labor was this lock the result, cannot be told. In cut No. 3, which is copied from a wooden lock lately brought to England from Alexandria, and now in the possession, we believe, of Mr. Chubb, of London, we have, as nearly as can be expected, the whole secret of the modern patent locks, and we deem it not amiss to give a brief description of it.*** The right-hand staple is fixed in the side of the door; the cross-piece is the bolt, the projecting piece at the right is the key. Into the upper part of the staple are fitted three loose pins, which drop into three corresponding holes in the bolt, so as

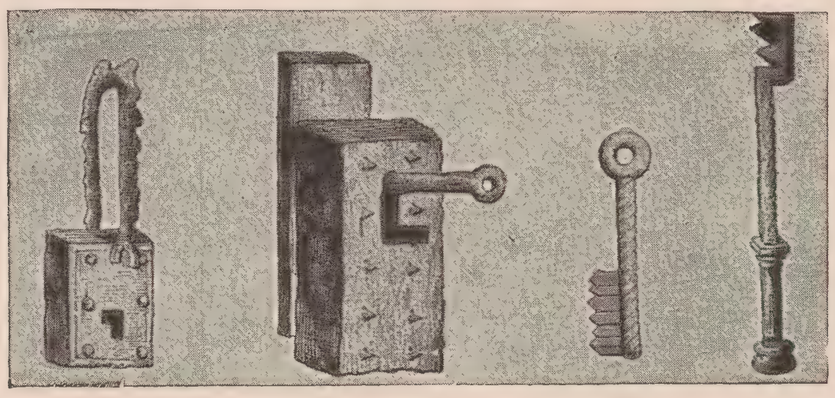


NO. 5.

**Bonomi's "Ninive e i suoi Palazzi."

***For all mechanical explanations that may be found in this sketch, we are indebted to the kindness of Mr. Frederick Vors.

to fasten the door when the bolt is pushed in to its full extent. The key is a straight piece of wood having at one end several pegs, corresponding in position with the movable pins or tumblers in the lock This key is inserted lengthwise through the slot or hole formed in the bolt, and then the pegs in the key, corresponding with the vertical holes in the bolt, into which the movable pins have dropped, lift up the pins, flush with the upper side of the bolt, and allow it to be moved backward or forward, to fasten or unfasten the lock. Now it would appear that no other key than the one made for



NO. 6. NO. 7. NO. 8. NO. 9.

this lock could have disengaged the bolt; because, from the movable pins being of different lengths, it follows that the pegs in the key must have been of corresponding height, and that, if any of the pegs in the key were too long or too short, they would not free the bolt.

ANNUAL MEETING CHICAGO ARCHITECTURAL CLUB

THE twentieth annual meeting of the Chicago Architectural Club was held on May 1, about a hundred members being present. The following officers were elected:

President, Edward O. Nelson; first vice president, E. B. Pattison; second vice president, John Lilleskau; secretary, Charles H. Kable; treasurer, L. E. Denslow; member of the executive committee and chairman of the house committee, Arthur J. T. Bennett; member of executive committee and chairman of educational committee, Otto A. Silha. The change in officers was general and it was interesting to note that the officers of last year were changed generally in face of the fact that they had each served with distinction and gave their places to other good men. It was also noted that no one refused to serve though the work of the club has so advanced as to make office bearing a task that only enthusiasm for the club's welfare can compensate. The officers of this year will also have much work in connection with the Architectural League through the election of a member, N. Max Dunning, to the presidency of the League. Mr. Dunning was called for and gave a sketch of the purposes and objects of the League which he said was dual in its functions; its attitude toward the people at large and that toward the clubs which constituted its membership. In the former it was educational in guiding the appreciation of the people in the practical architectural problems that confront them. This was best carried out by the individual clubs as they were best informed of the local situation. This also covered the general guidance of the people in the artistic value of commonplace things. In its attitude toward the membership the League was a clearing house for club ideas, and should give them incentive to better their organizations along progressive lines and promote the general advancement of architectural standards in the United States. Mr. J. L. Hamilton, who was also a delegate to the League convention, made a well arranged report of the proceedings, including all the resolutions of importance, a report that pictured the activities of the League in every detail.

Mr. Dunning announced the officers of the League in addition to the president, to be: First vice president, Richard E. Schmidt; secretary, J. L. Hamilton; treasurer, Herman Von Holst; committee-at-large, Alfred H. Granger, Elmer Jensen and Howard Shaw.

Each report of the year's work seemed complete and in receiving them from the chairman of committees, the club realized that those in control of the club's work last year were individually exceptionally able and understood why the club has so rapidly advanced along practical lines. These reports included those of E. O. Nelson, secretary; A. S. Alschuler, chairman of the entertainment committee, and Hugo Zimmerman, chairman of the house committee.

COLUMBIA SCHOOL OF ARCHITECTURE

THE McKim Fellowship in the School of Architecture of Columbia University, is to be awarded annually, instead of biennially, as heretofore. This fellowship provides an income of $800 a year to be devoted to travel and study abroad. The recipient must spend not less than six months as a student at the American academy at Rome. The fellowship is awarded to the man who submits the best architectural design to a jury composed of Thomas S. Hastings, W. A. Delano, Donn Barber, H. F. Hornbostel and John Van Pelt.

Quoting from the secretary's report just issued: The school of architecture of Columbia University was established by the trustees in 1881, under the direction of Professor William R. Ware, for the training of professional architects, and has from its foundation aimed to promote the highest standards in architectural education. Its methods of teaching and its courses of instruction are based upon the principle that the thoroughly equipped architect is much more than an accomplished draughtsman. His training should include not only technical exercises in drawing, design and construction, but also a broad and enlightening intellectual discipline, especially in the history and theory of his art and in those modern languages that are the key to so much of its best literature.

Beginning with the academic year 1906-07, four classes of students will be accepted. (These four classes will be in existence during the academic year 1905-06, except that requirements for candidacy for the degrees of B. S. in architecture will be the same as for the schools of applied science.)

(1) Graduate students, who have already attained the bachelor's degree in architecture, or its equivalent, either in Columbia university or elsewhere, and who wish to pursue advanced studies in architecture, whether as candidates for the higher degrees (A. M. and Ph. D.) or not;

(2) Candidates for the degree of bachelor of science in architecture, who have completed at least two years of study in a college or scientific school or who have had an equivalent training;

(3) Candidates for the certificate in architecture, who must offer evidence, by examination or otherwise, of a good general secondary education; and

(4) Special students, not candidates for degree or certificate, who have had at least two years of professional office experience or other equivalent training, and who may select their own courses of study, subject to approval by the faculty.

Thus the doors of the School of Architecture, which is under the directorate of Prof. A. D. F. Hamlin, are open to students of a very wide range of capacity and previous training whether in the form of general liberal culture or of artistic and professional experience.

ASSOCIATION NOTES

ILLINOIS CHAPTER A. I. A.

The regular monthly meeting of the Illinois Chapter of the American Institute of Architects was held April 17. The evening was occupied by Samuel A. Treat in an informal account of the fall and rebuilding of the Campanile of St. Mark's of Venice. Mr. Treat was in Venice four days before the fall of that historic campanile, and in the summer of 1904 revisited Venice and was so fortunate as to obtain admittance to the enclosure where the foundations were being relaid. His description of the old foundations and the new reinforcement was aided by drawings. In the discussion that followed it developed that this reinforcement, in the general opinion of the architects present, would not add materially to the stability of the foundations and in the event of uneven settlement, which was almost certain to occur, the foundations proper would pull away from the reinforcement and, as one expressed it, "all sorts of things might occur."

Mr. Treat's account was listened to with the greatest interest, as his descriptions and deductions were those of an architect of exceptional ability, and as far as he was permitted to see the work and the engineer's drawings, thorough. In this inspection of the latter, one would judge, however, that he was not met with that thorough professional courtesy that is always accorded foreign architects and engineers who visit us here, as he had to obtain a letter of introduction from the American consul in order to obtain admittance, when his card should have obtained for him every facility to examine the work.

CHICAGO ARCHITECTURAL CLUB.

On April 17, Mr. Fitzhugh Taylor entertained the club members with an instructive paper upon fire protection from the standpoint of the underwriter. This took in the relative merits of boiler-iron and wood-tinned shutters and wired-glass windows, the iron shutter and glass windows being placed on a par and both inadequate through their heat conductive quality, and the tinned wood superior to the iron. Isolation of electric wires one inch apart by grooved strips was better than open wiring six inches apart. The tendency of steam pipes to start combustion was impressed on the audience as well as the liability of coal to heat if placed in bins more than ten feet in depth. In general the paper was full of useful hints in regard to fire preventive measures.

In regard to fire resistance, the advantage of mill construction over unprotected iron was explained and the liability of pipes inserted behind the fireproof tiling around columns to expand and break the tiling and expose the iron, was illus-

trated by several examples in the Baltimore fire when, the speaker stated, every case of fireproofing parting from the column was caused by such pipes. Water curtains and sprinkler systems were advocated and many useful and practical hints regarding the latter were given. At the conclusion of the paper, Mr. Taylor received the thanks of the club.

William S. McHarg, the sanitary engineer, entertained the club on April 24 with a description of how to arrange a sewerage plant for isolated houses and institutions on a biological plan. An interesting description was also given by Mr. McHarg of the intercepting sewers now being constructed in Chicago by him. Mr. McHarg's discourse was full of practical and accurate information and was so clearly expressed in words that diagrams and plans seemed unnecessary.

N. Max Dunning, who was elected president of the Architectural League of America at the recent convention at Pittsburg, was called for, and in his usual clear and concise manner, assured the members that it was not to himself but the Chicago Architectural Club that the credit of the election was due.

A VETERAN ARCHITECT RETIRES

After a long and honorable career in the practice of architecture in Chicago, Mr. W. L. B. Jenney has retired from active practice.

Owing to ill health he has spent the past winter in California, and has concluded to make his permanent residence in Los Angeles.

Mr. Jenney retires with an international reputation. He was educated in Paris in architecture and engineering, and returned to this country prior to the breaking out of the civil war. Upon enlistment he was assigned to the engineer corps under General Grant, and was mustered out as Brvt. Major, Chief of Engineers on the staff of General Sherman. He came to Chicago and began the practice of architecture in 1867. From the start his work was recognized and it has left its impress upon the rapid growth of the city.

Always a leader, Mr. Jenney's training as an engineer turned his mind towards metallurgy and the growing use of iron and steel in construction. His war experience urged him to do and dare, so that in the spring of 1884, the architectural world saw the first start of what has revolutionized building construction, which was when the Home Insurance building at La Salle and Adams streets reared its skeleton iron and steel frame above its cohesive covering of brick and stone masonry, and its stands today in basic principle the first bulding of skeleton construction.

Mr. Jenney was to the west in construction what the late Richard M. Hunt was to the east in design, a man of reason and ideas, and fearless to exploit them.

Many of the leading architects of Chicago were at one time in his office, notably, Messrs. D. H. Burnham, Louis H. Sullivan, I. K. Pond, Howard V. D. Shaw, Wm. Holabird, Martin Roche, Jas. G. Rogers, N. S. Patton, A. H. Granger, and others; and among those in other cities William A. Dodd of Louisville. He will now take his well earned rest from his successful and busy career. The business will be carried on under the firm name of Jenney, Mundie & Jensen, by Mr. Mundie and Mr. Jensen, who have been with Mr. Jenney for the past twenty years.

OUR ILLUSTRATIONS

Casino Club House, Edgewater, Ill.; S. N. Crowen, architect, Chicago.

Building for the Paper Mills Co., Chicago; George L. Harvey, architect.

Interior view Fidelity Trust Co., Kansas City, Mo.; Van Brunt & Howe, architects.

Stable for Peter Thomson, College Hill, Ohio; Jas. Gamble Rogers, architect, Chicago.

Farmers and Merchants National Bank, Los Angeles, Cal.; Morgan & Walls, architects.

Residence for Mrs. W. H. Miller, Mt. Morris, Ill.; Richard Ernest Schmidt, architect, Chicago. Three views are shown.

'79 Hall, Princeton University, Princeton, N. J.; Benj. W. Morris, architect, New York City. Two views are shown.

Carnegie-Stahl Library, Bellevue, Ohio; Richard Ernest Schmidt, architect, Chicago. Exterior and interior views are shown.

Some of the more important of the technical buildings of Germany are illustrated in this number. They are: Technical High School, Charlottenburg; Technical High School, Aix La Chapelle; Technical High School, Brunswick; Technical High School, Dresden; Technical High School, Stuttgart. With the thoroughness characteristic of Germany in educational affairs, there exist there highly organized and equipped schools under national control for nearly every trade and industry. The first of these to be established were the schools for builders. In the early days of these drawing was given first importance with the view that the mathematical and geometrical relations of shapes, sizes and proportions should form the base of industrial education. Starting as branches of drawing schools, the schools and academies for builders are now independent with special courses, teachers and mostly separate buildings, devoted to the complete technical instruction of the architect, engineer, mason, carpenter, etc. Perhaps the oldest school for builders was that at Munich which became a state institution in 1823. Since 1845 the development has been very rapid and these special schools are now numerous. From the most necessary instruction in materials and their uses, and in the principles of architecture, the present high efficiency has been reached, dealing with all the complex problems that go to make up the modern fireproof structures required by stringent regulations, by more scientific knowledge of heating, ventilation and lighting, and by the demand of the present day, commerce and society. A special ordinance was issued by Prussia in 1899 under which all the schools for builders were organized, and which specified all requirements for entrance, courses, examinations, etc. While the cities give financial support the State guarantees the maintenance of the schools; subsidizes them liberally and assumes direct control. After much discussion with builders a two year course was decided upon. For entrance, applicants must be 16 years of age, must have completed a common school course and have pursued for two summers the trade as apprentice to a mason, carpenter or architect. An entrance examination is required in German, arithmetic, and plane geometry, and a drawing must be submitted. For those who cannot meet these requirements, there are preparatory classes. A uniform curriculum for all the schools for builders in Prussia has been provided by ordinance for work above ground while a special course is established in many schools for underground building which is another evidence of the thoroughness of this instruction. Examining boards pass upon the fitness of candidates for graduation. In ten years the students in these schools have doubled in number. The origin of German engineering schools was later than of the schools for builders, and the first one was established in 1871. Most of these were the outgrowth of the builders schools and their development has been very rapid. There are two grades of engineering schools: the higher and lower; one giving instruction desired for the highest class of engineering and the other for more subordinate work. In this way a man devotes his time to instruction in just what will be of most service in the position for which he desires to fit himself.

SPECIAL PLATES.

Bank building for the Northern Trust Co., Chicago; Frost & Granger, architects.

The Borland Office Building, Chicago; Shepley, Rutan & Coolidge, architects.

Residence for H. W. Mallen, Oak Park, Ill.; George W. Maher, architect, Chicago.

Residence for John B. Drake, Jr., 2106 Calumet Ave., Chicago; Howard V. Shaw, architect.

Residence for Peter Thomson, College Hill, Ohio; Jas. Gamble Rogers, architect, Chicago.

Residence for Edward F. Robbins, 2126 Prairie Ave., Chicago; Mann, McNeille & Lindeberg, architects, New York and Chicago.

The American Trust & Savings Bank Building, Chicago; Jarvis Hunt, architect, general exterior view and detail of lower stories are shown. The structure will be 260 feet high and will contain eighteen stories. The three lower stories will be finished in polished granite, with brick and terra cotta above. The bank boor will be forty-five feet high. May 1, 1906, is the date set for occupancy. The structure will cost $1,500.000.

Correction—The residence for Mr. Finch which was published in our April number was the work of Jas. Gamble Rogers, not of R. E. Schmidt as given.

OBITUARY

MAURICE O. JOHNSON.

The dangers that will attend the construction of the Panama canal, at least to those engaged there who come from northern latitudes, is brought home to the profession in Chicago, through the death there on April 30 from yellow fever of Maurice O. Johnson, formerly a draftsman in the office of Francis T. Bacon, architect of the Illinois Central railroad. A brilliant draftsman and an ambitious worker, Mr. Johnson followed the fortunes of Chief Engineer Wallace, who gave up his position with the Illinois Central last July to lead in that stupendous engineering work. He was made chief architect to the canal commissioners, his work including the designing of new and the repair of old buildings along the route. The announcement of Mr. Johnson's death was made to the Chicago Architectural Club at the close of its annual meeting on May 1, and a vote was taken standing that the secretary make a record of the sense of loss to the club and its recognition of the high attributes and genial nature of their fellow member, with directions that a copy of the resolutions be sent to his family at Louisville, Kentucky. He was twenty-eight years old.

Mr. Johnson was for several years a leading spirit in the activities of the club and his ambition seemed to be realized in joining the forces of Mr. Wallace at Panama. He was a young man of great promise and leaves many friends who mourn his untimely death.

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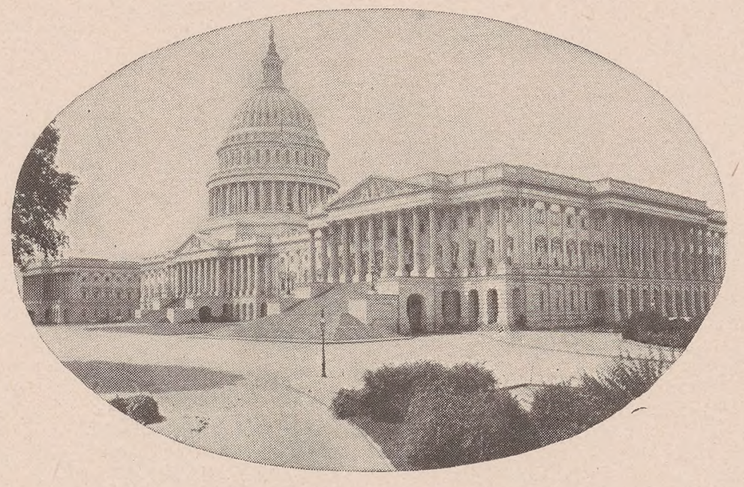

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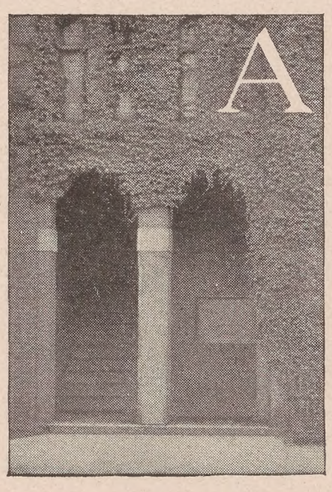

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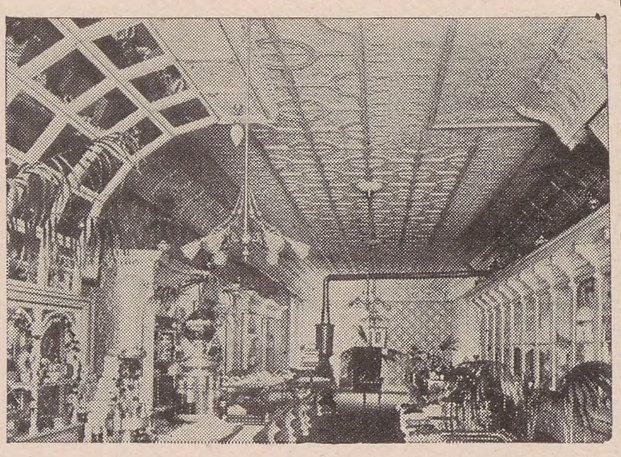

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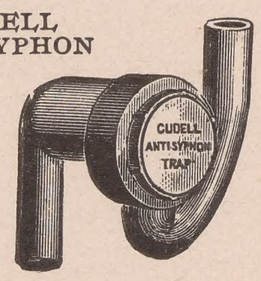

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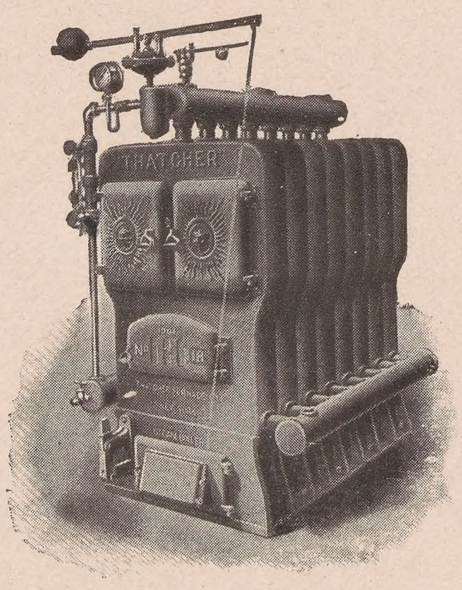

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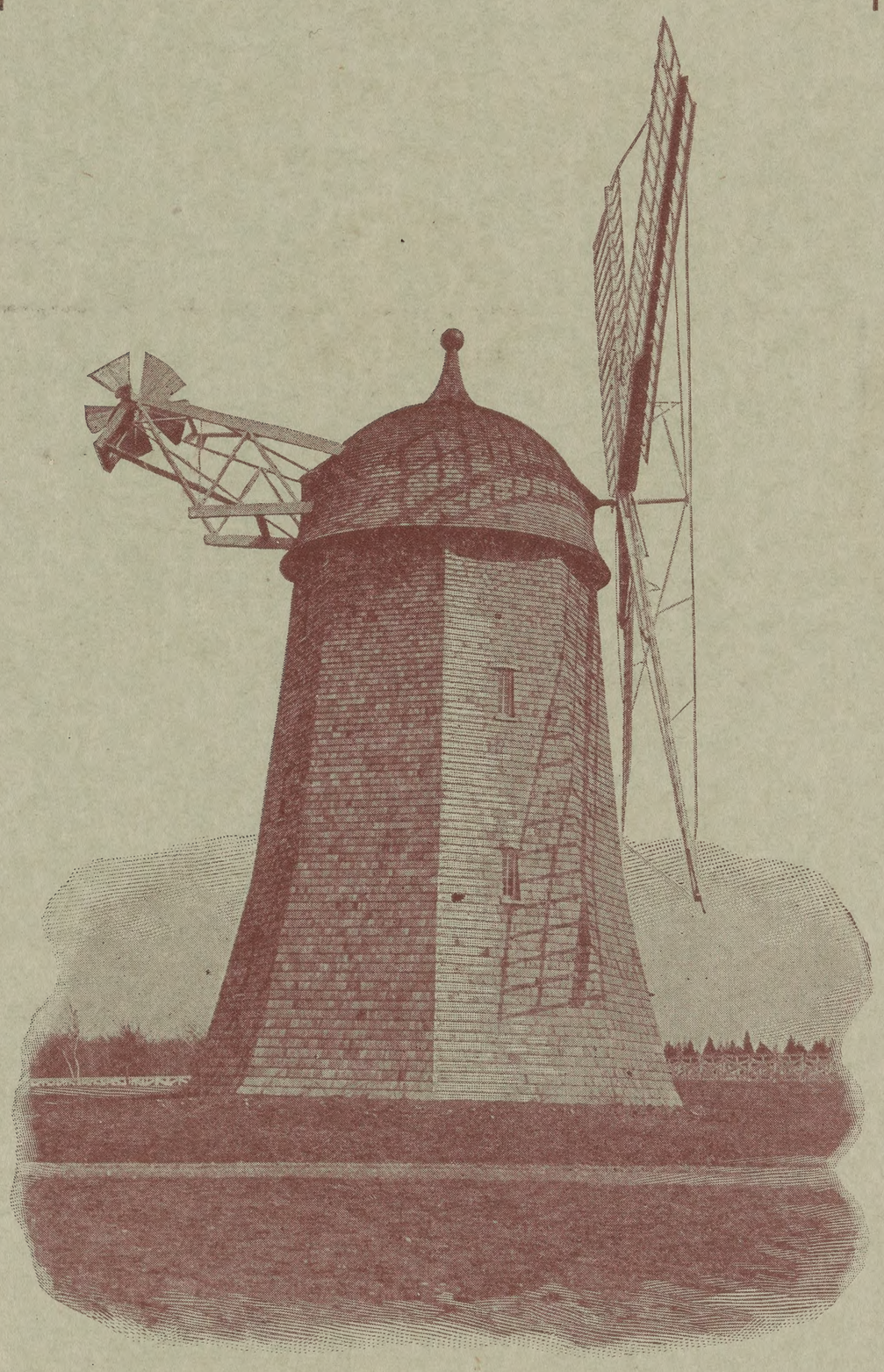

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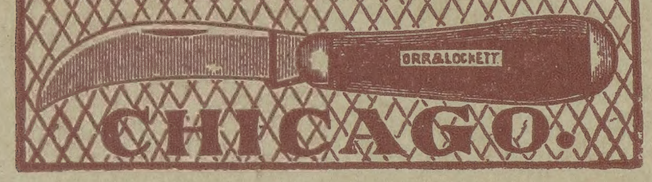

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